

FIG. 1A

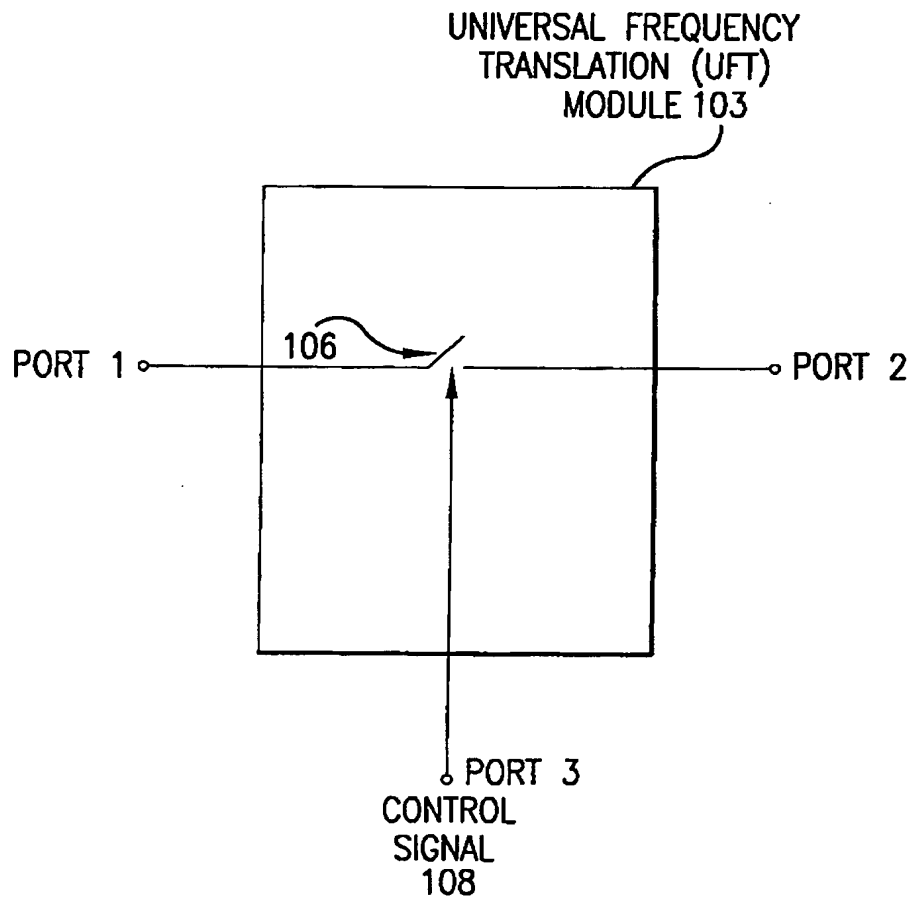


FIG. 1B

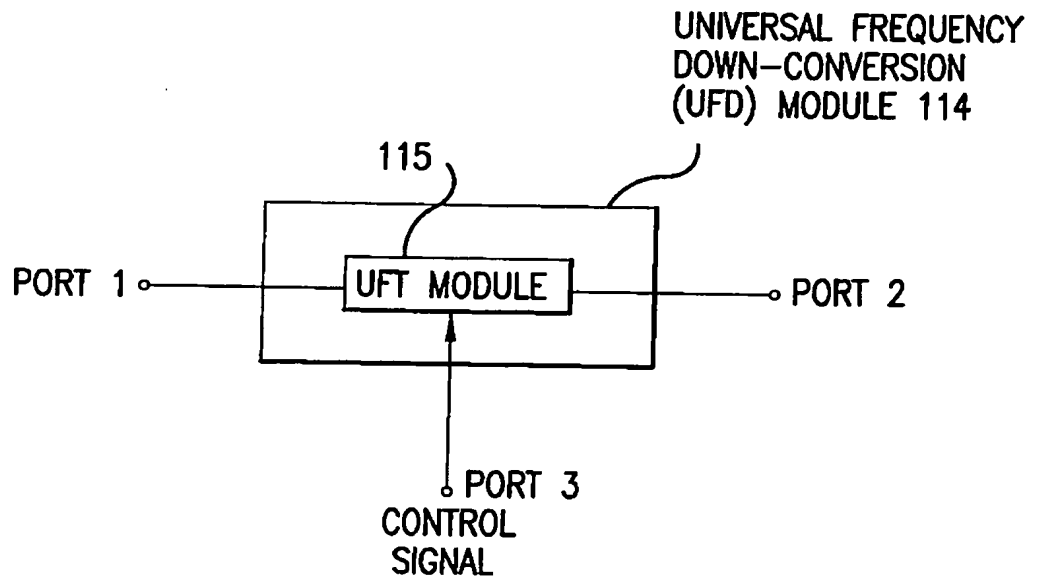


FIG. 1C

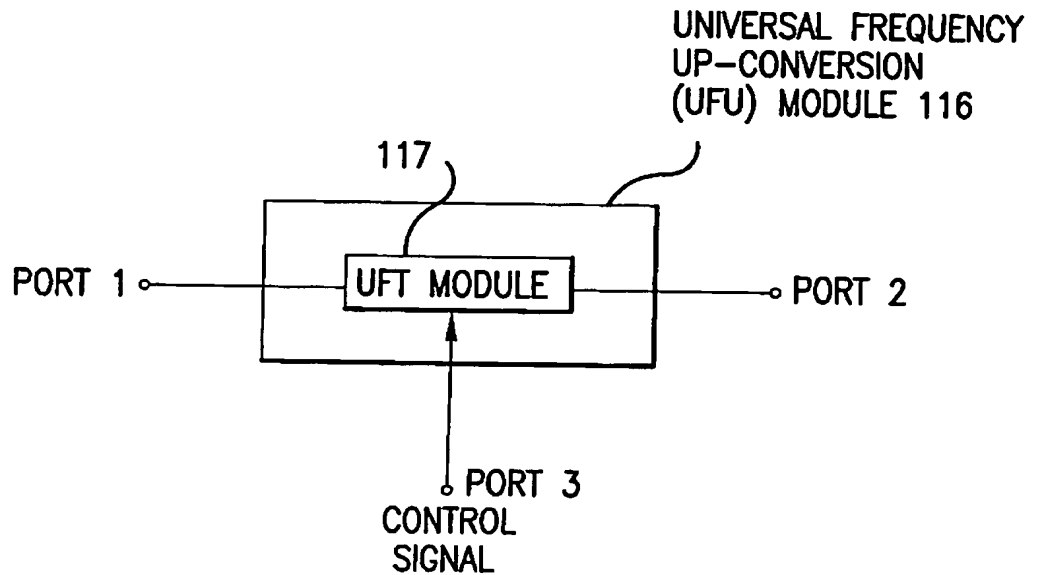
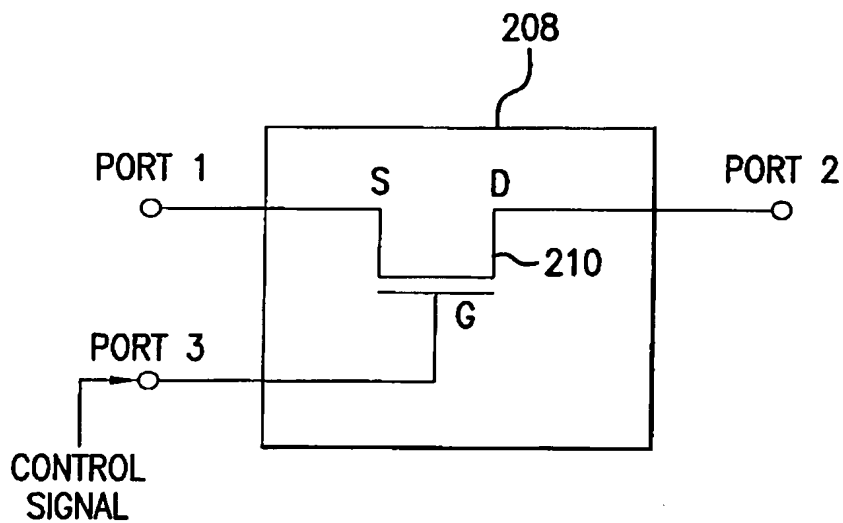
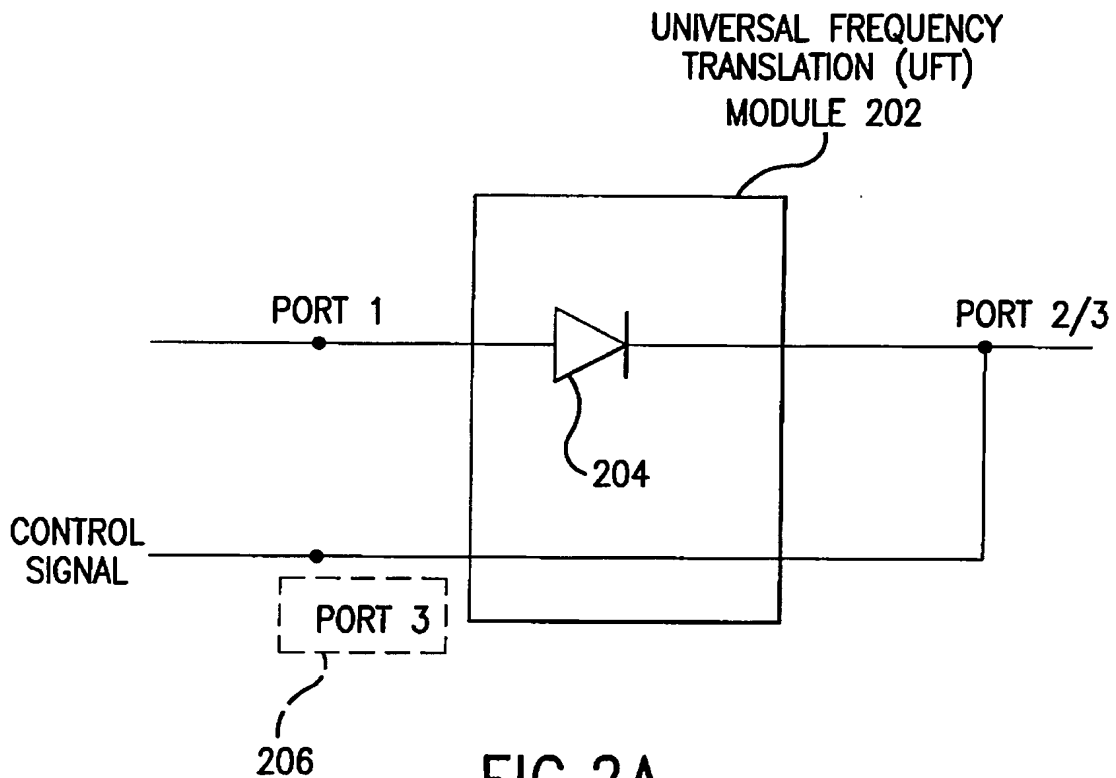


FIG. 1D



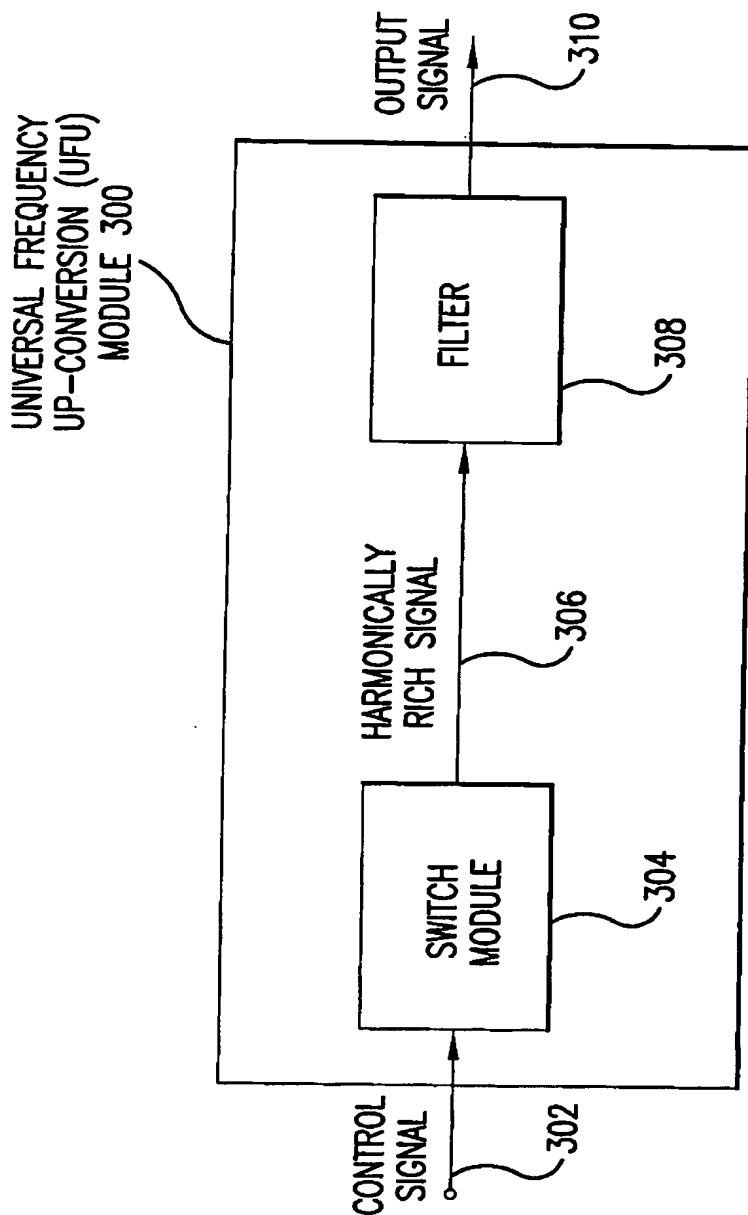


FIG. 3

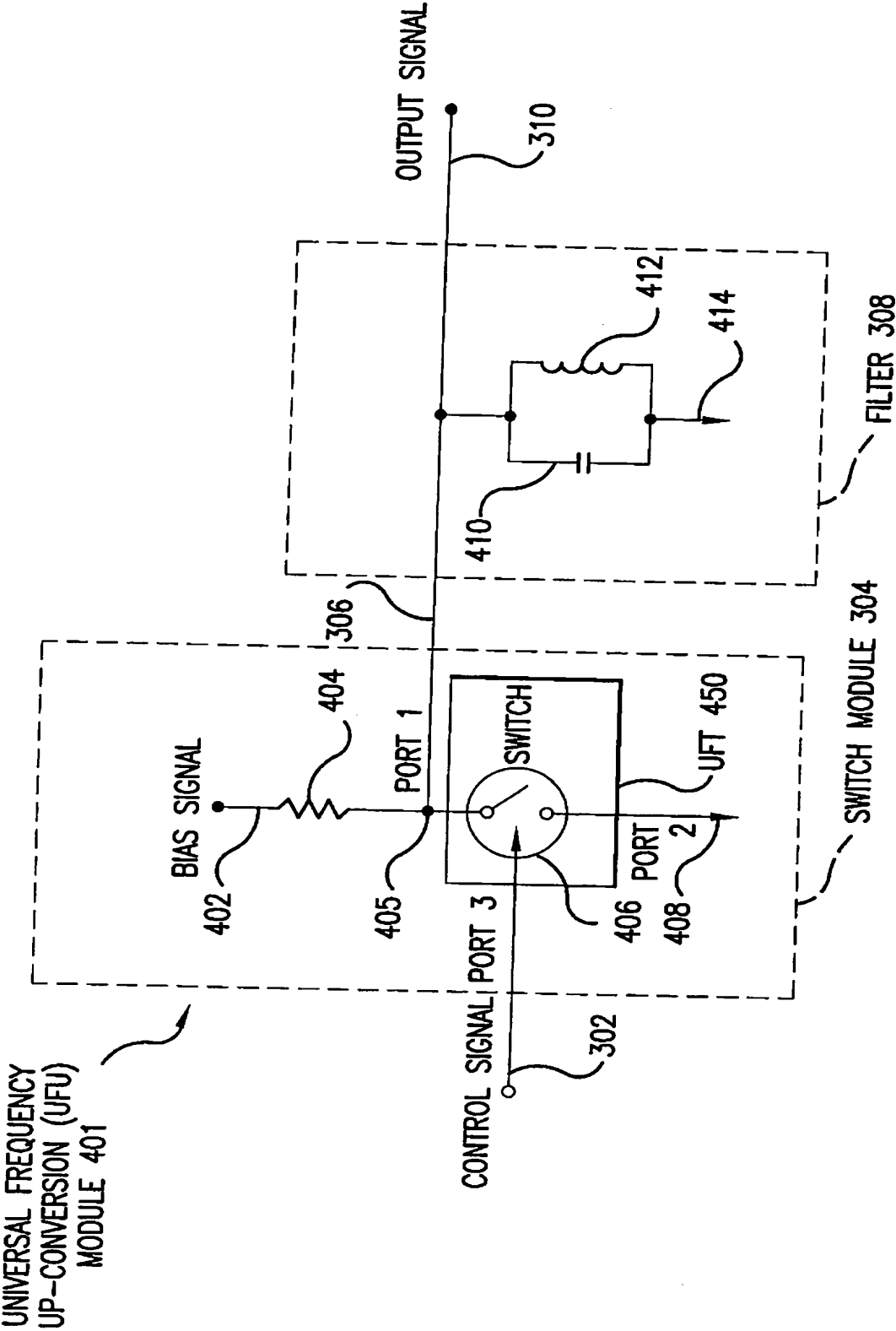


FIG. 4

UNIVERSAL FREQUENCY  
 UP-CONVERSION  
 (UFU) MODULE 590

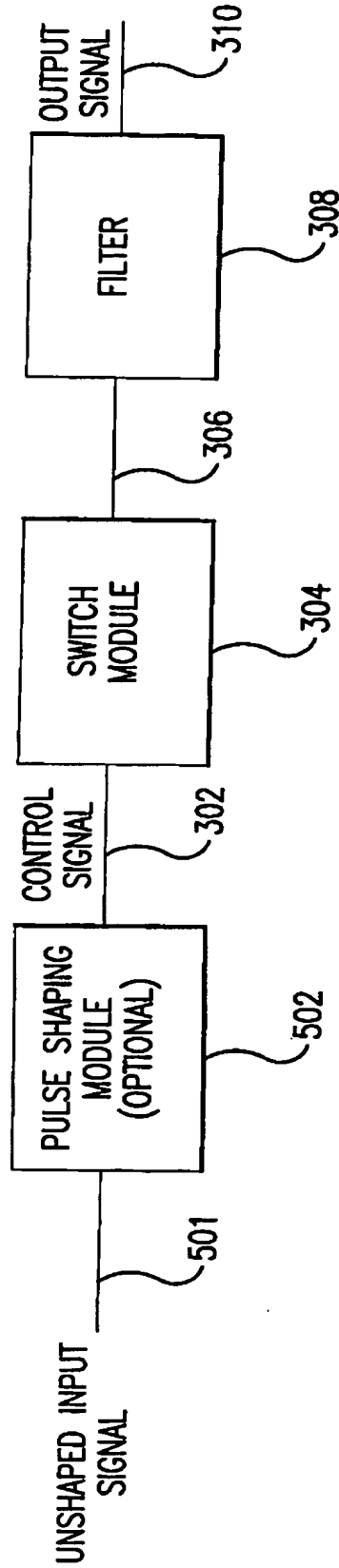
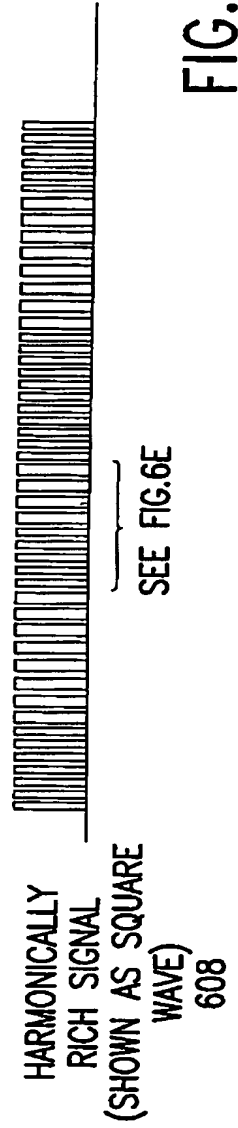
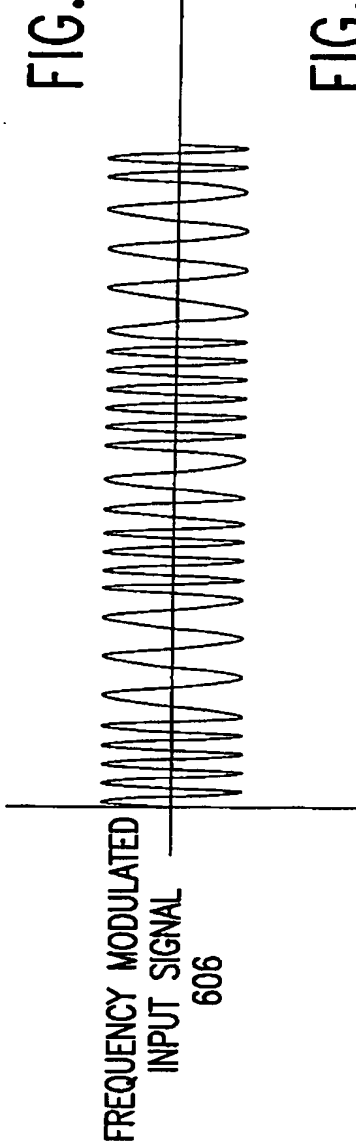
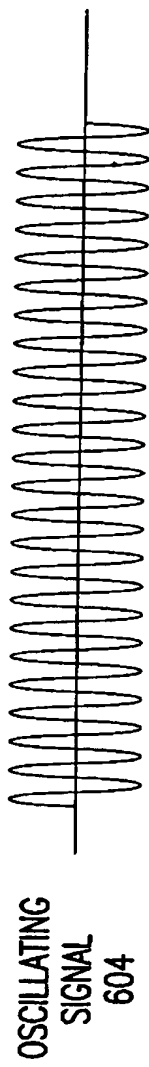
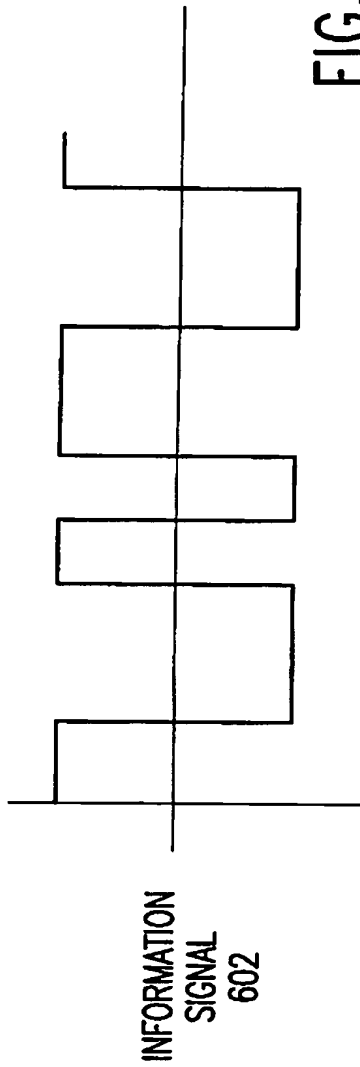
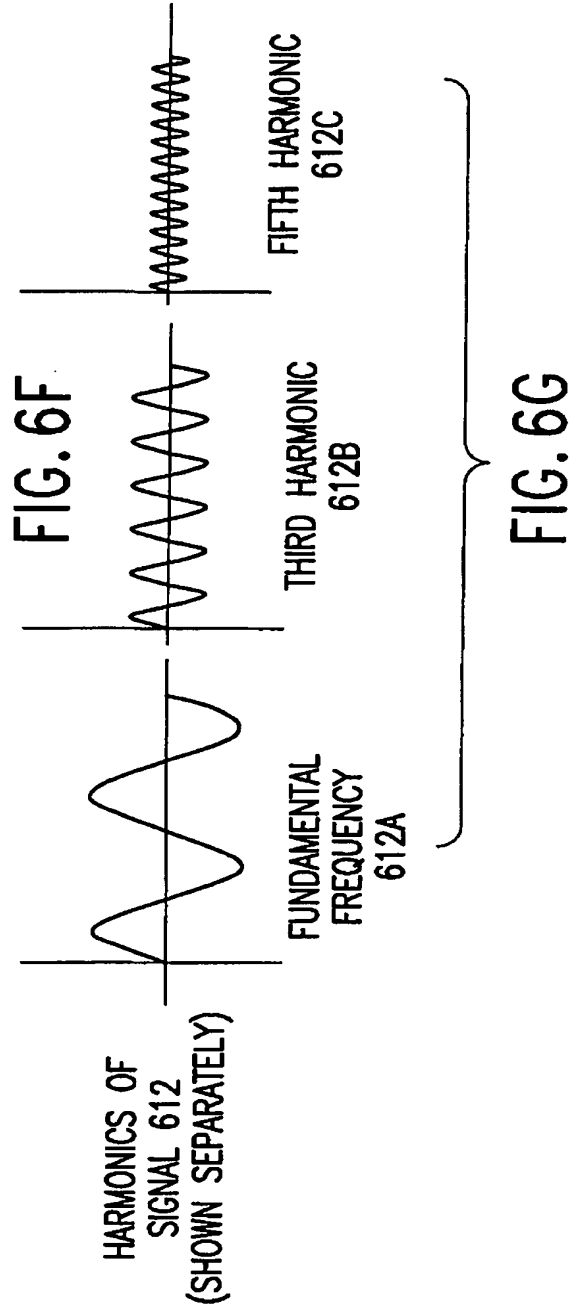
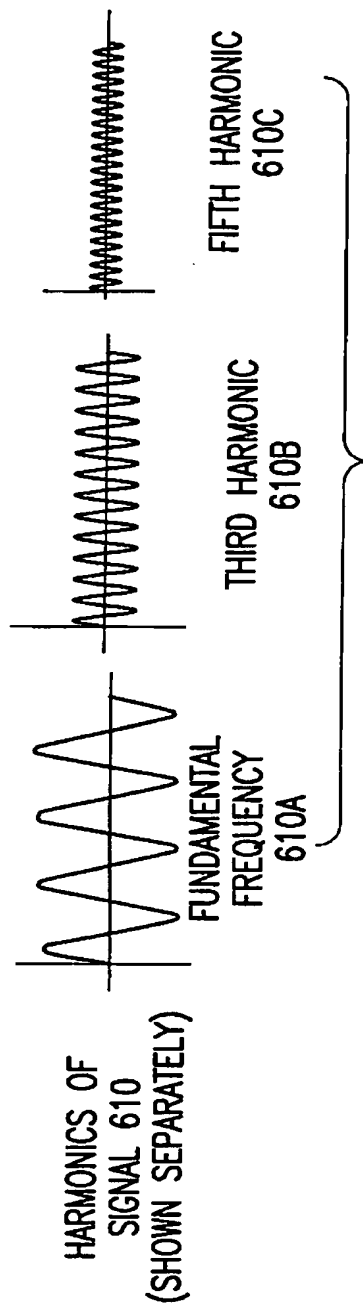
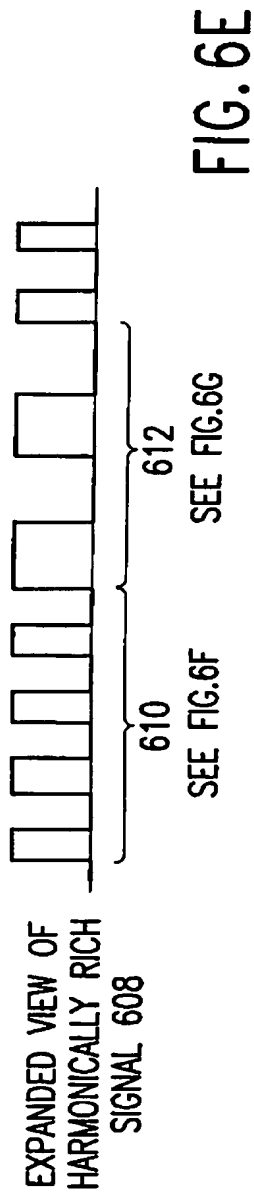
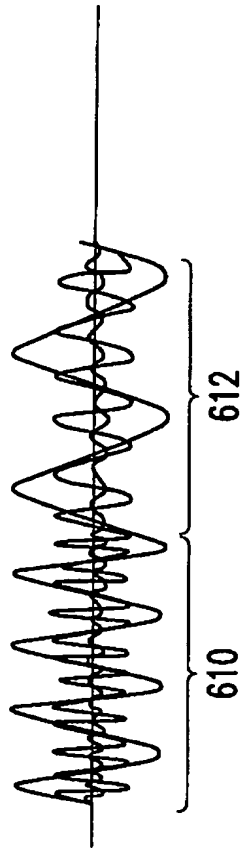


FIG. 5

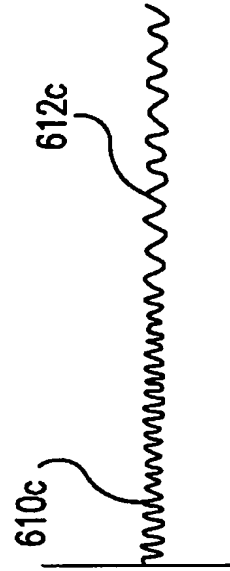






HARMONICS OF  
SIGNALS 610 AND  
612  
(SHOWN SIMULTANEOUSLY  
BUT NOT SUMMED)

FIG. 6H



FILTERED  
OUTPUT  
SIGNAL  
614

FIG. 6I

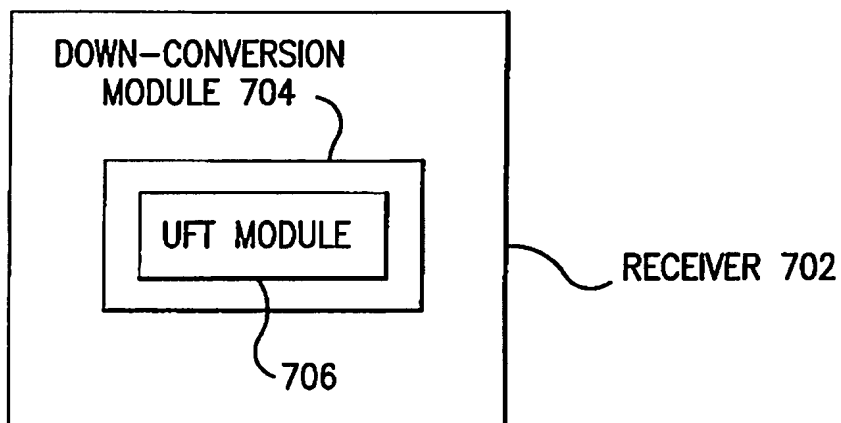


FIG. 7

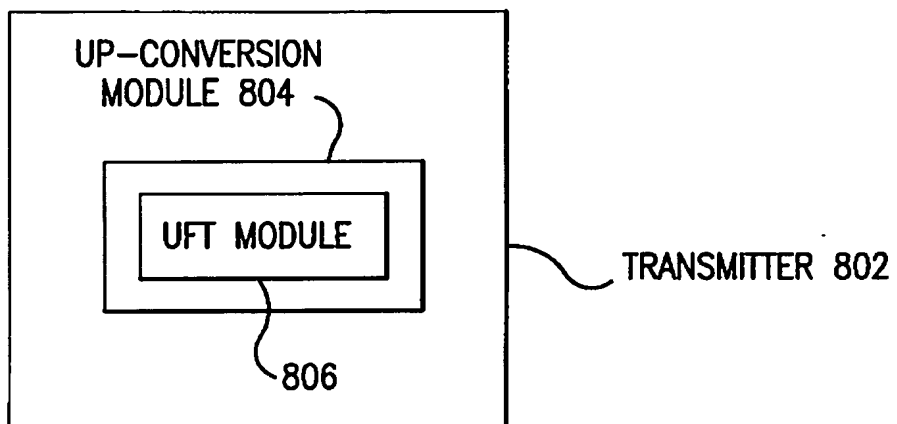


FIG. 8

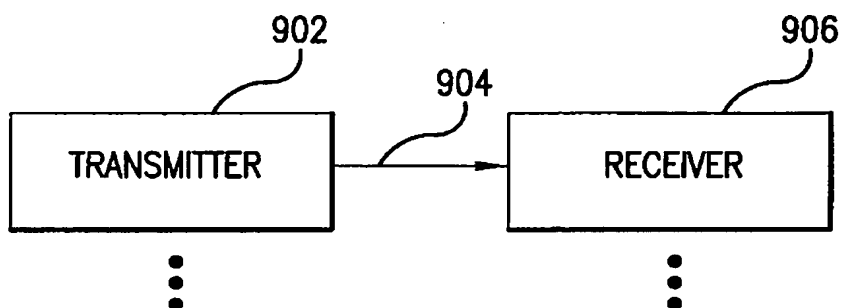


FIG. 9

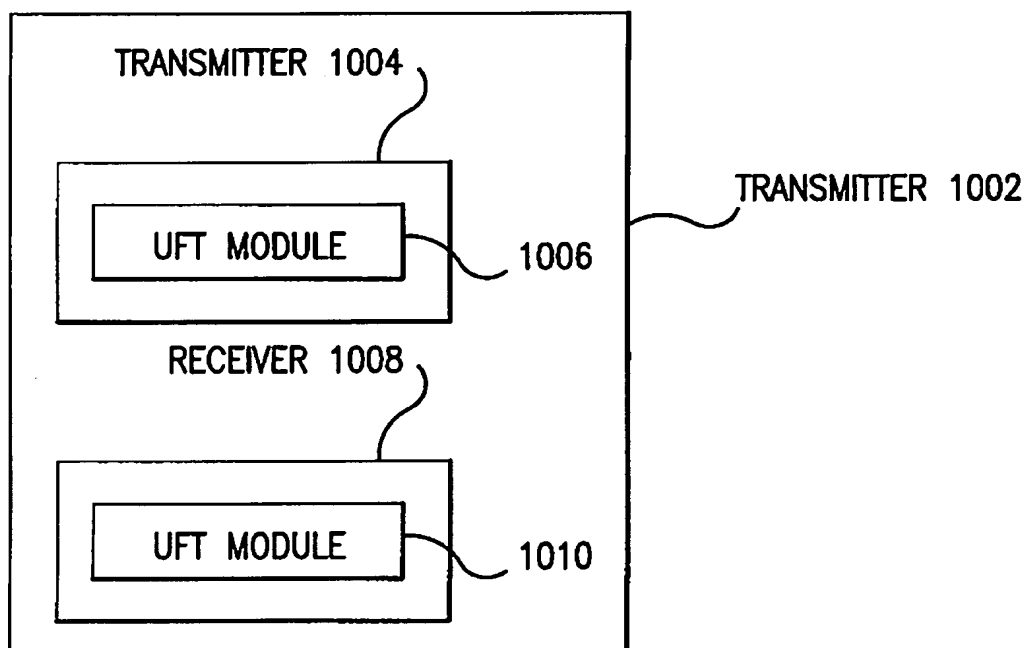


FIG. 10

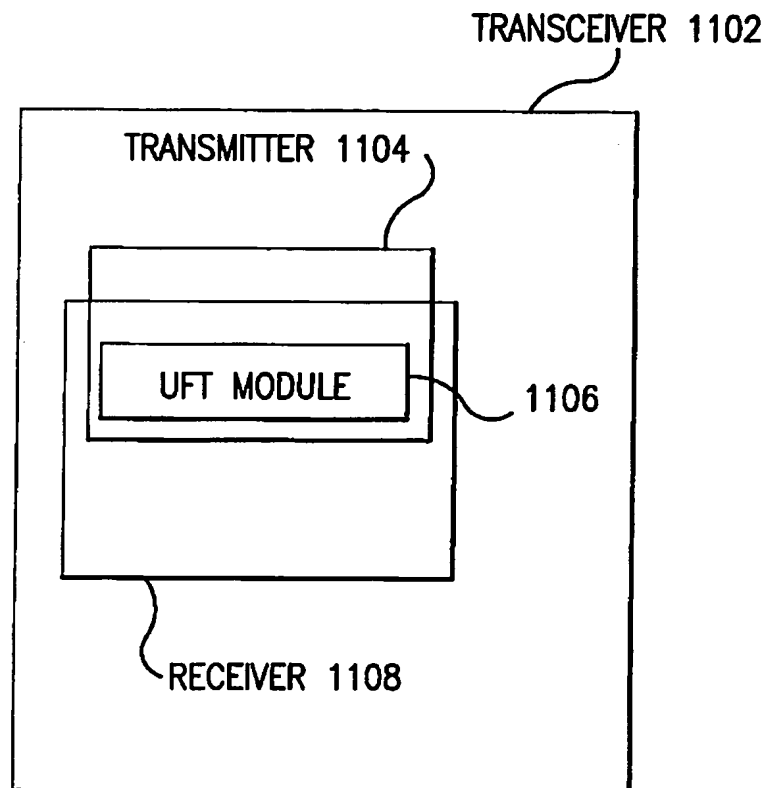


FIG. 11

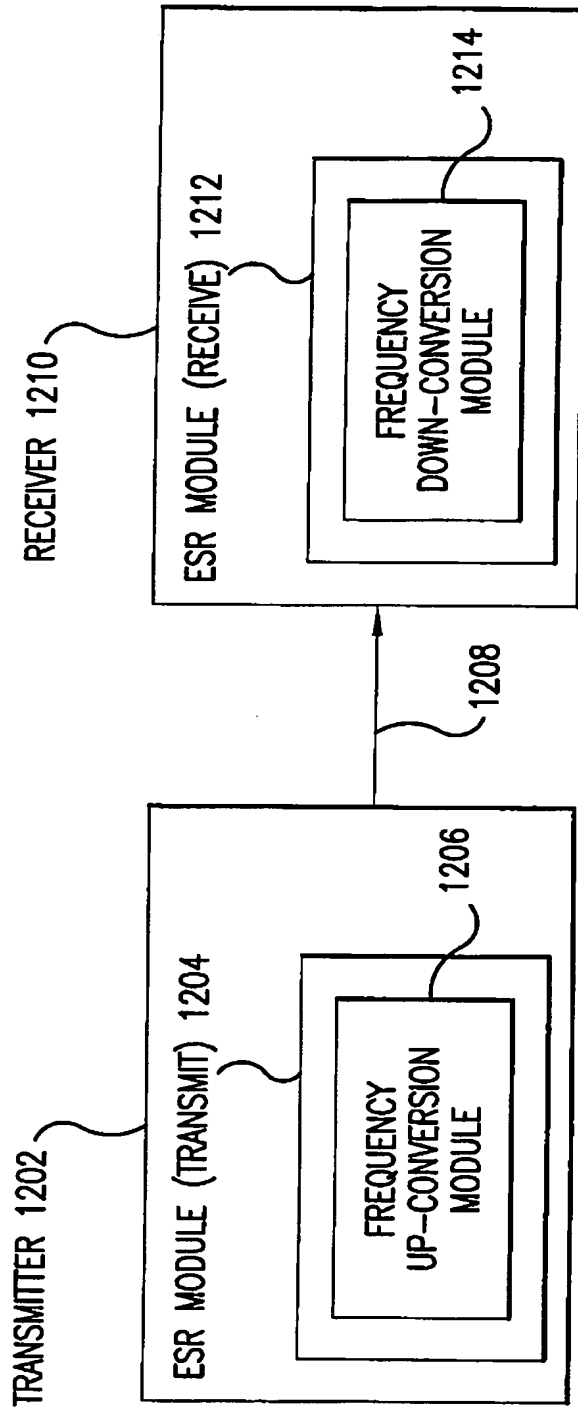


FIG. 12

UNIFIED DOWN-CONVERTING  
AND FILTERING (UDF) MODULE 1302

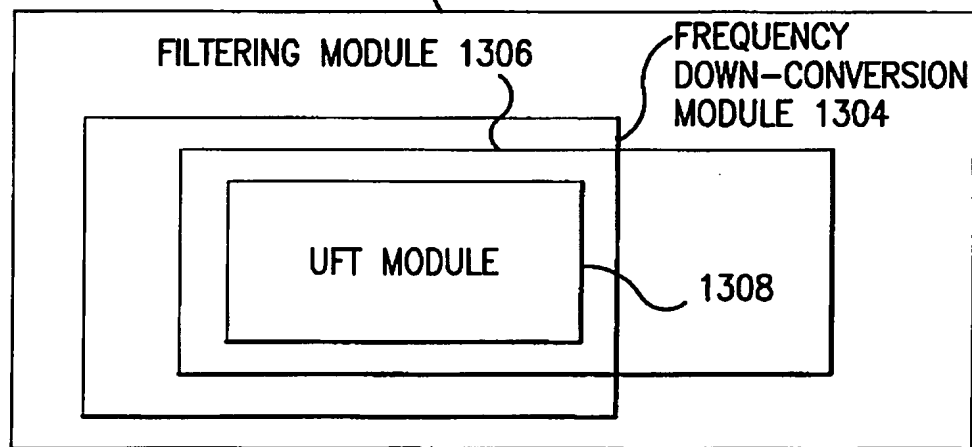


FIG. 13

RECEIVER 1402

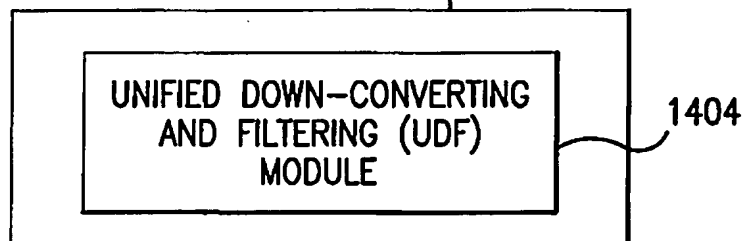


FIG. 14

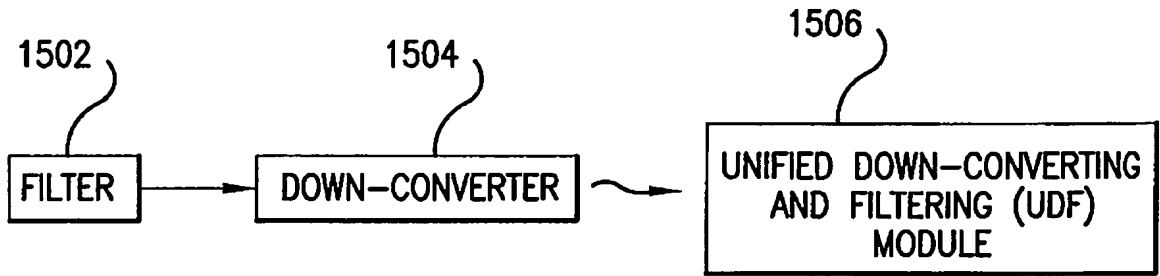


FIG. 15A

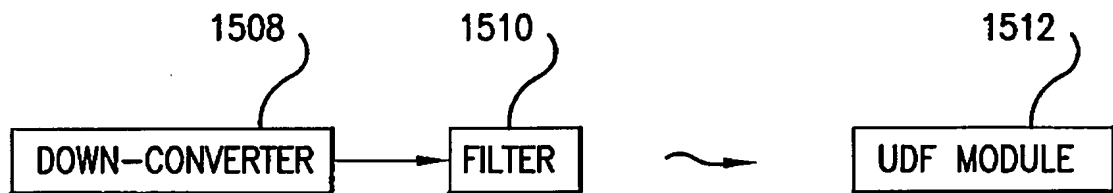


FIG. 15B

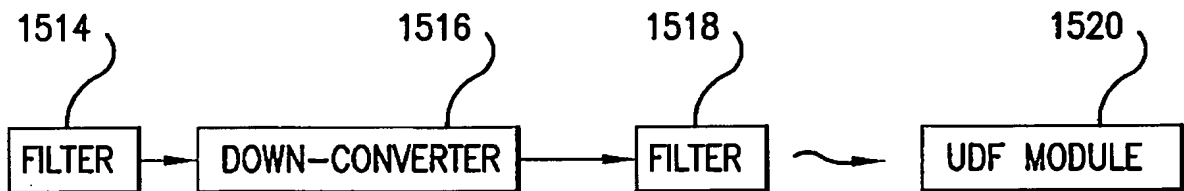


FIG. 15C



FIG. 15D



FIG. 15E

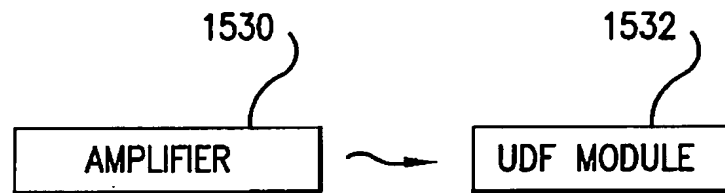


FIG. 15F

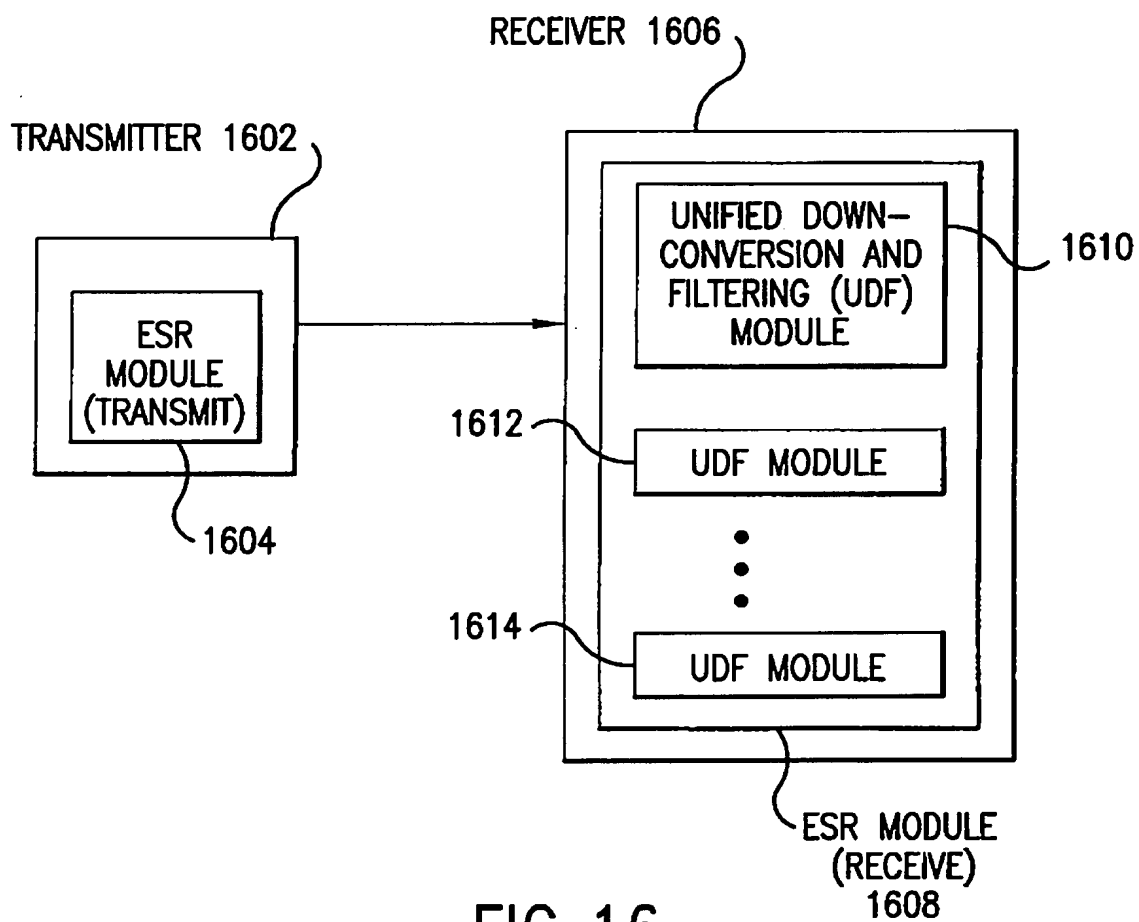


FIG. 16

UNIFIED DOWNCONVERTING AND  
FILTERING (UDF) MODULE 1702

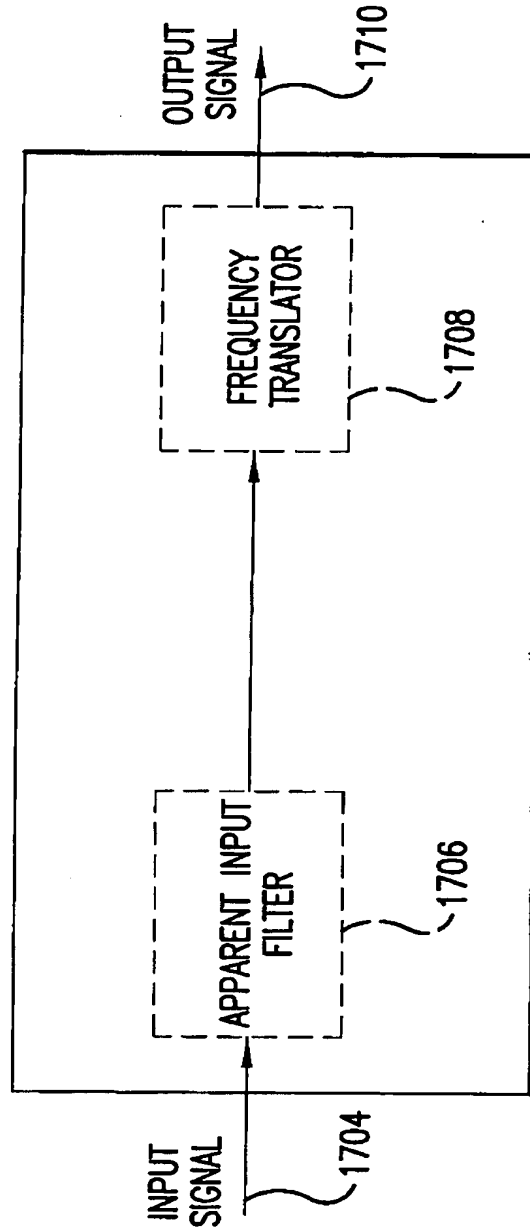


FIG. 17

TIME NODE	t-1 (RISING EDGE OF $\phi_1$ )	t-1 (RISING EDGE OF $\phi_2$ )	t (RISING EDGE OF $\phi_1$ )	t (RISING EDGE OF $\phi_2$ )	t+1 (RISING EDGE OF $\phi_1$ )
1902	$V_{t-1}$ 1804	$V_{t-1}$ 1808	$V_t$ 1816	$V_t$ 1826	$V_{t+1}$ 1838
1904	—	$V_{t-1}$ 1810	$V_{t-1}$ 1818	$V_t$ 1828	$V_t$ 1840
1906	$V_{t-1}$ 1806	$V_{t-1}$ 1812	$V_t$ 1820	$V_t$ 1830	$V_{t+1}$ 1842
1908	—	$V_{t-1}$ 1814	$V_{t-1}$ 1822	$V_t$ 1832	$V_t$ 1844
1910	— 1807	—	$V_{t-1}$ 1824	$V_{t-1}$ 1834	$V_t$ 1846
1912	—	— 1815	—	$V_{t-1}$ 1836	$V_{t-1}$ 1848
1918	—	—	—	—	$V_t$ 1850 0.1* $V_{t-1}$ 0.8* $V_{t-1}$

FIG. 18

1802

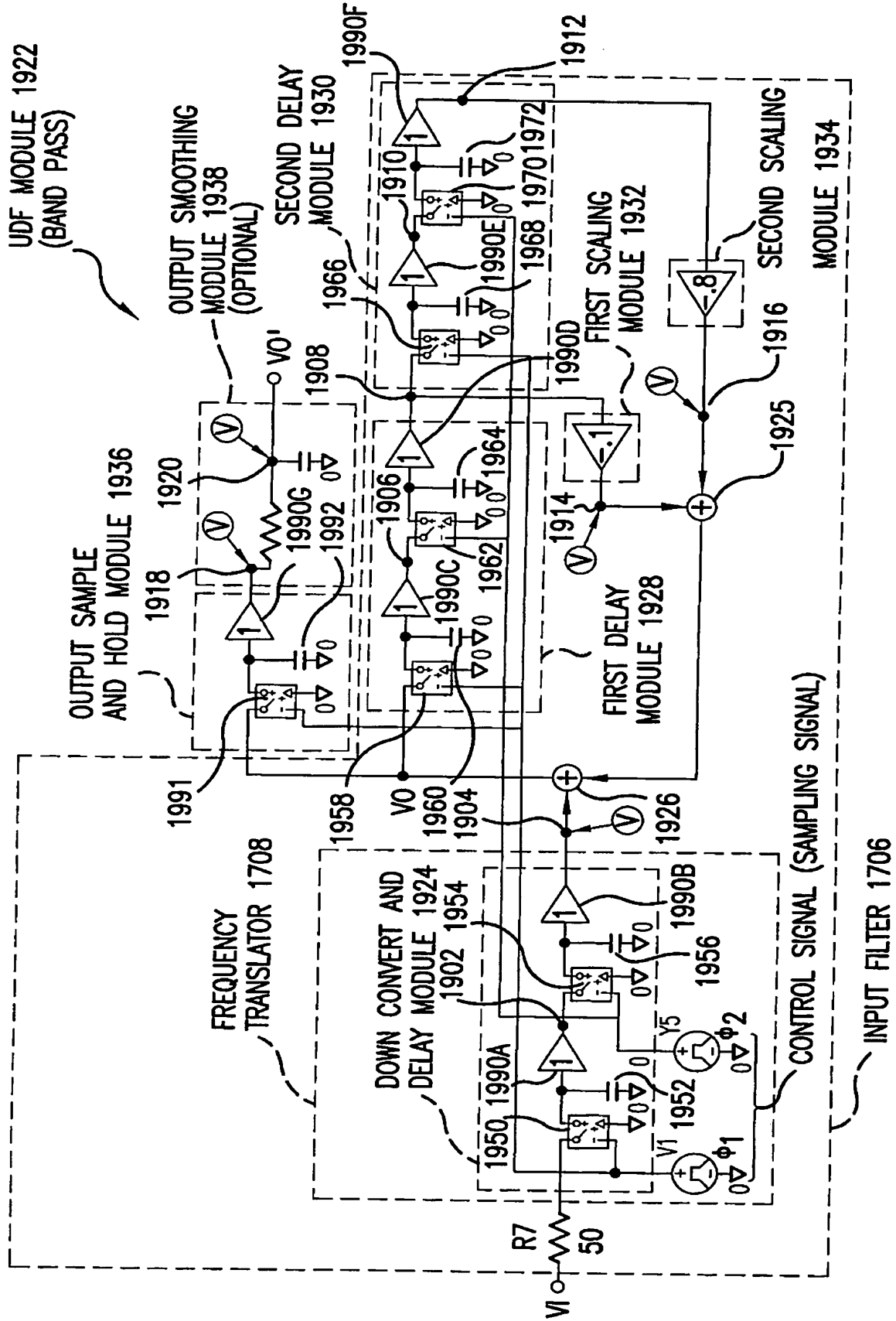


FIG. 19

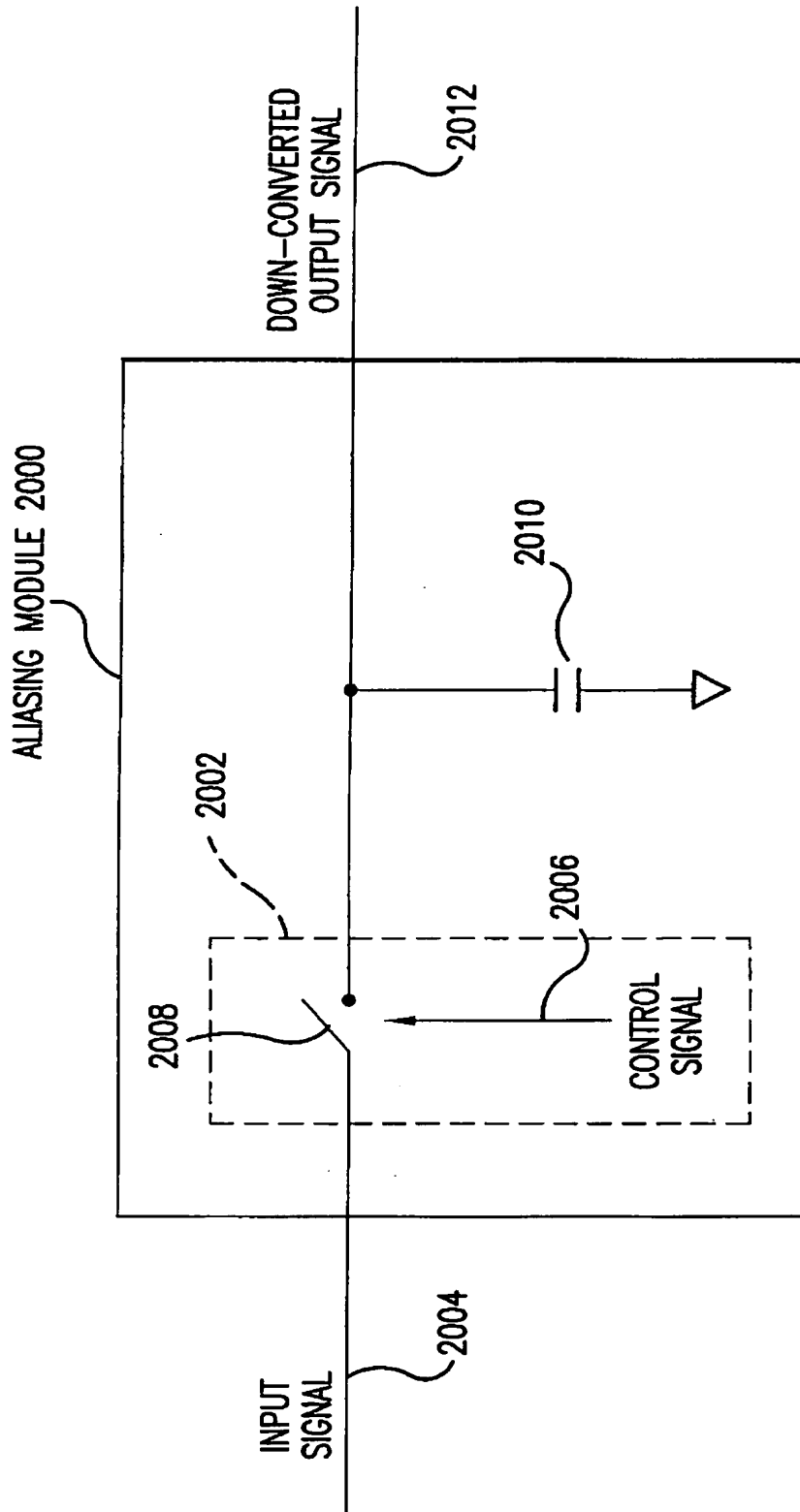


FIG. 20A

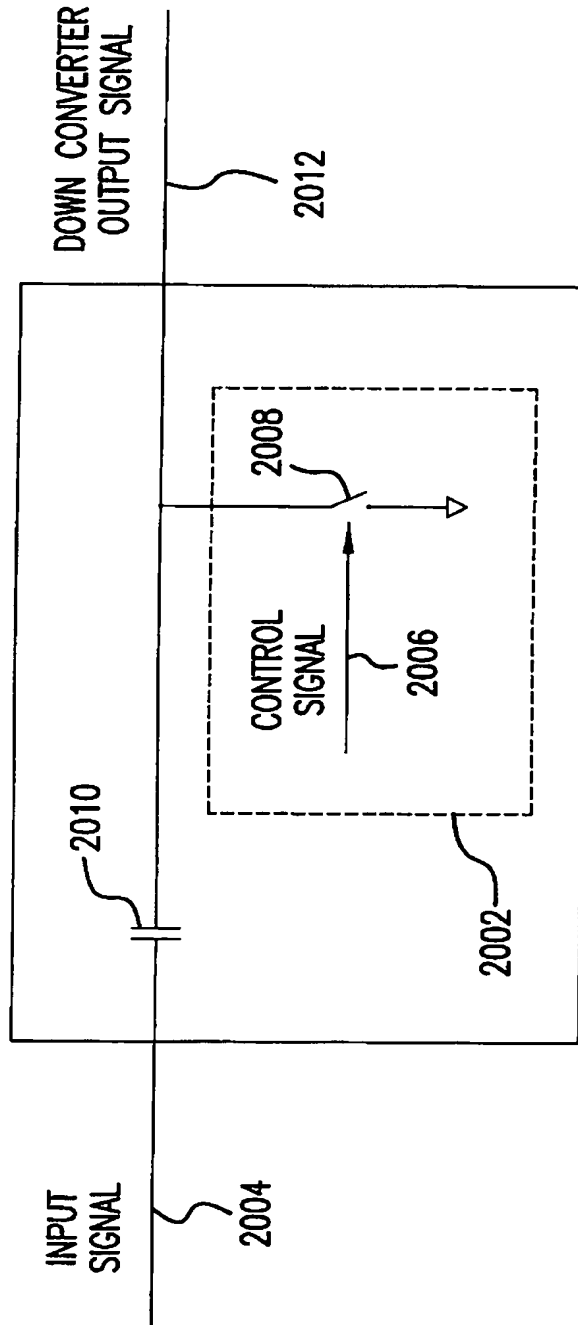


FIG. 20A-1

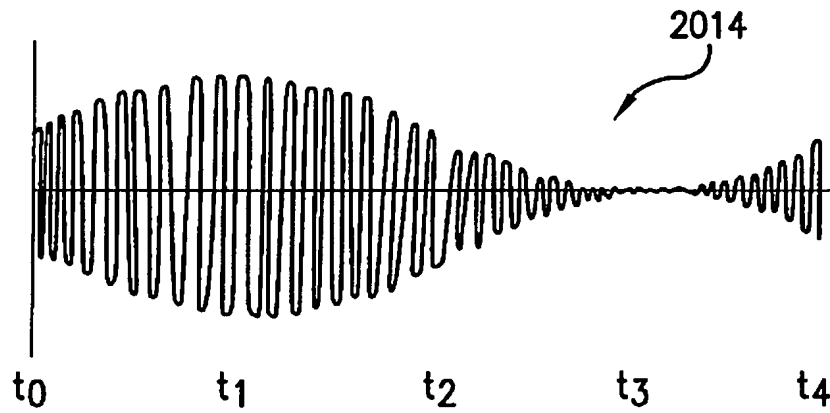


FIG. 20B

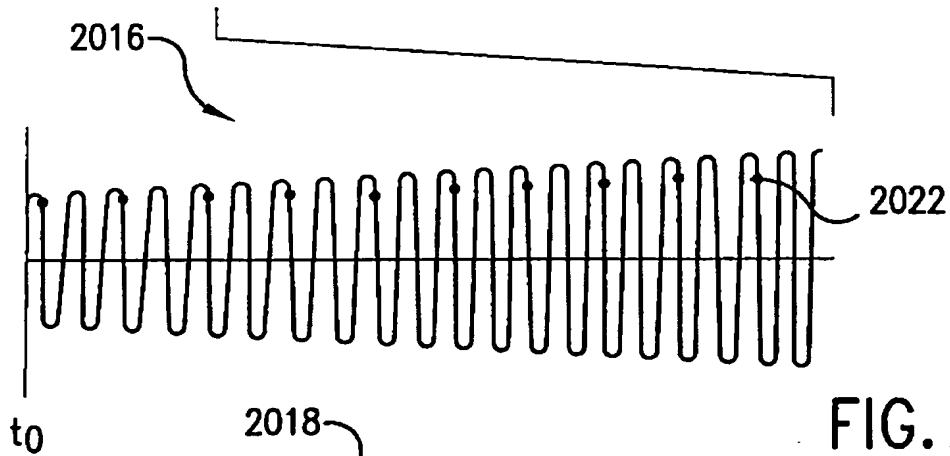


FIG. 20C



FIG. 20D

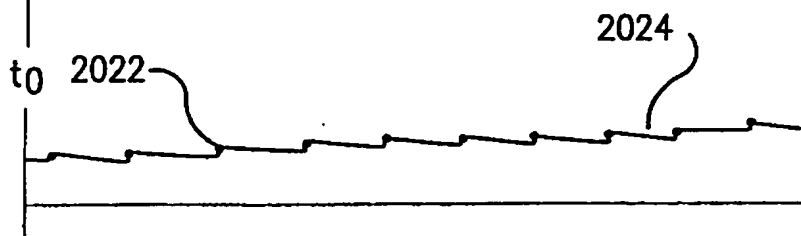


FIG. 20E

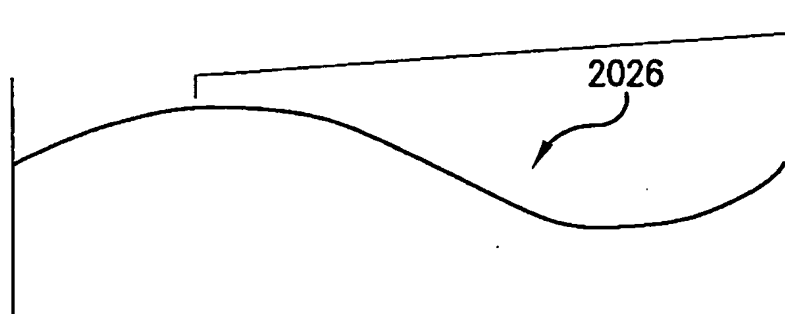


FIG. 20F

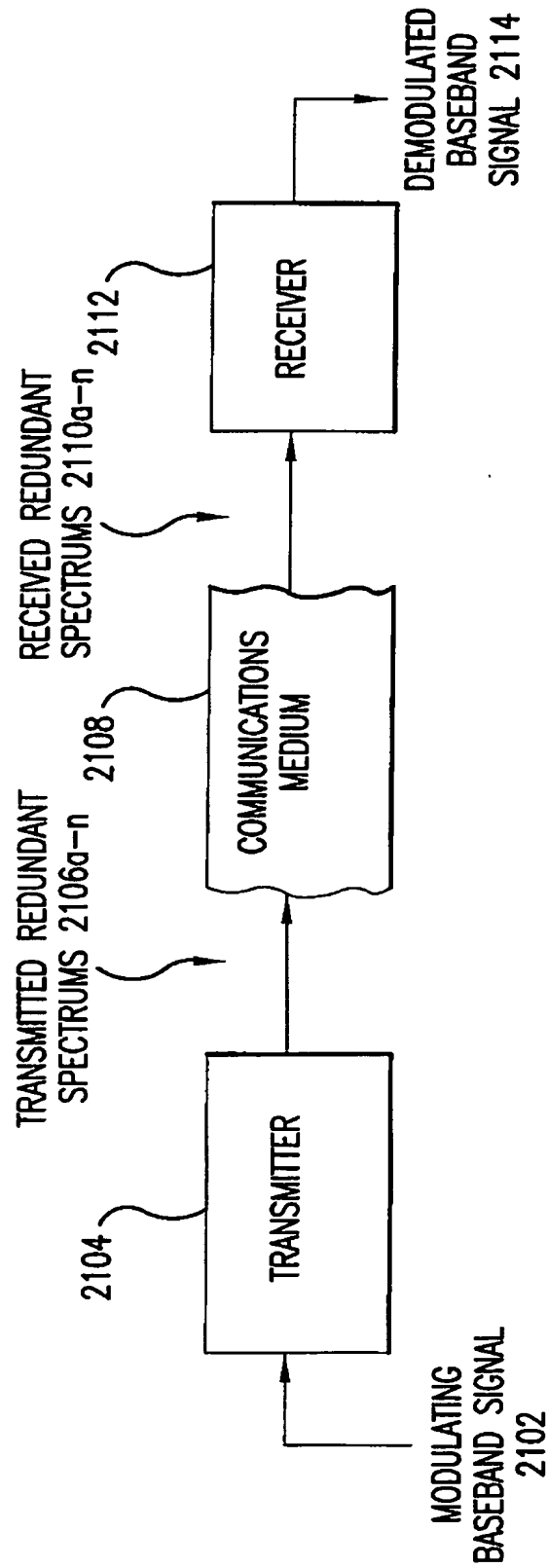


FIG. 21

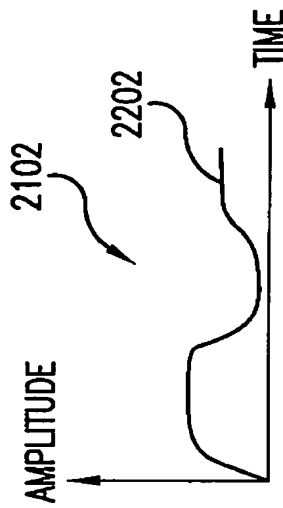


FIG. 22A

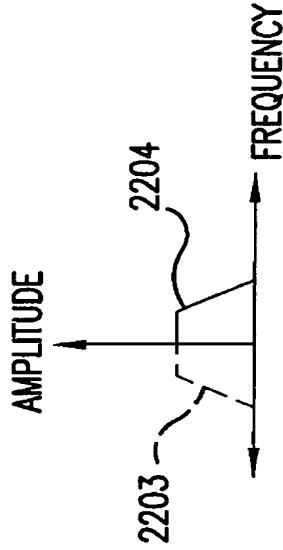


FIG. 22B

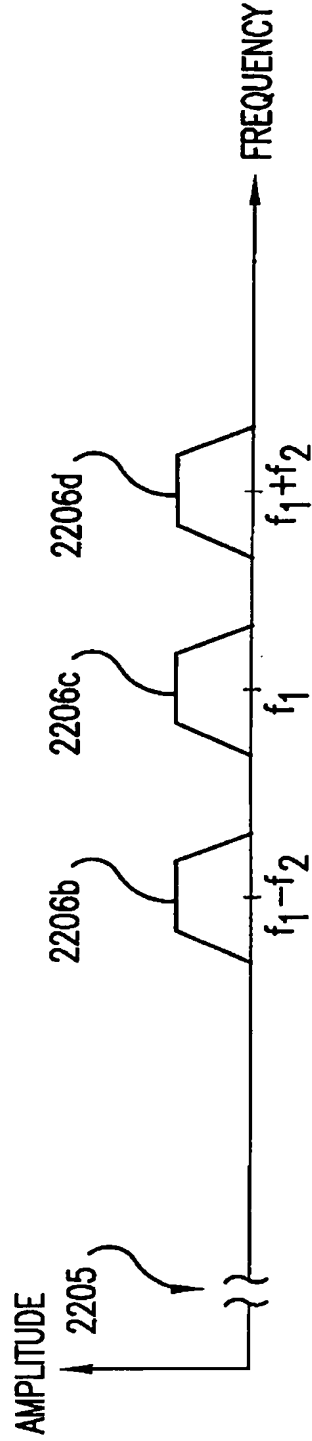


FIG. 22C

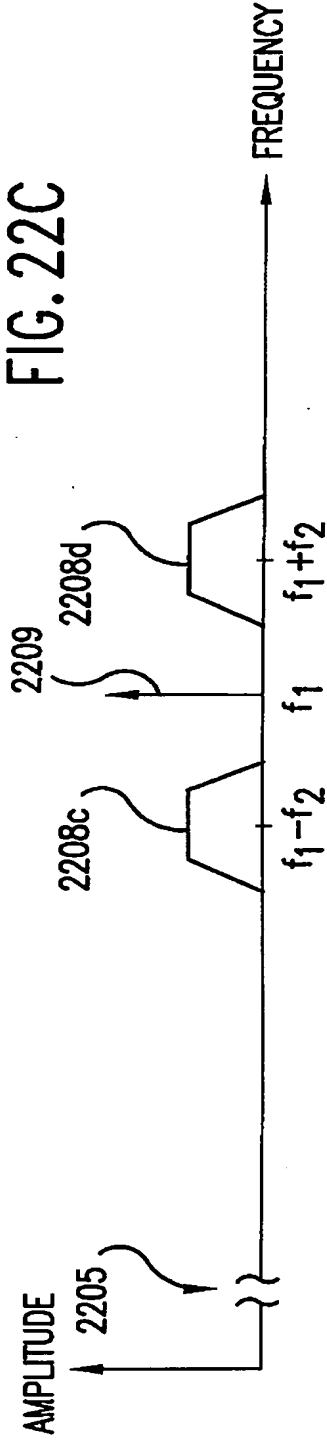


FIG. 22D

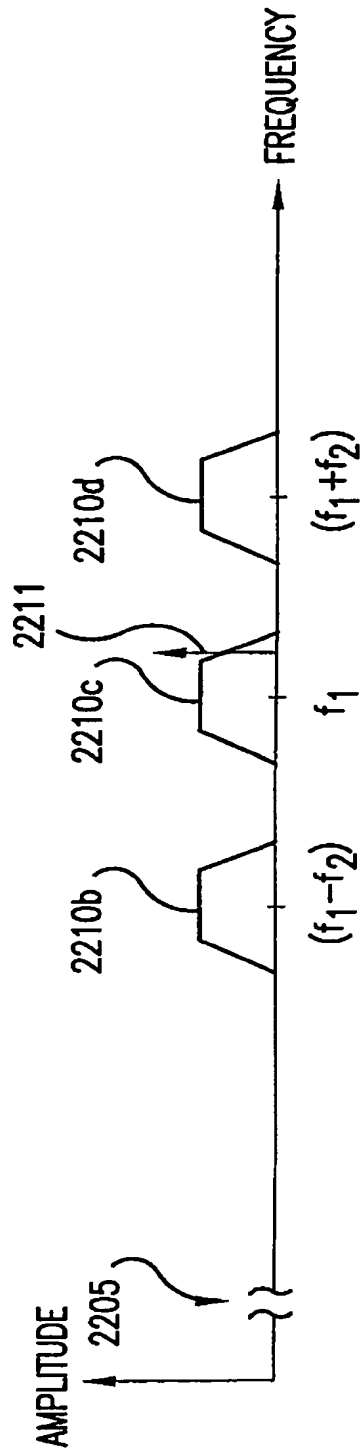


FIG. 22E

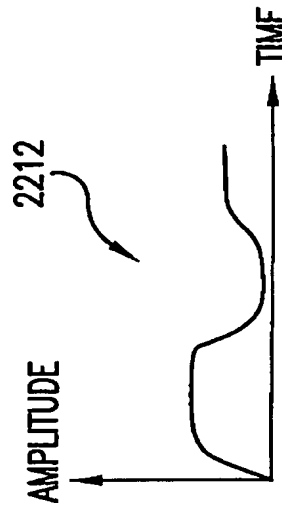


FIG. 22F

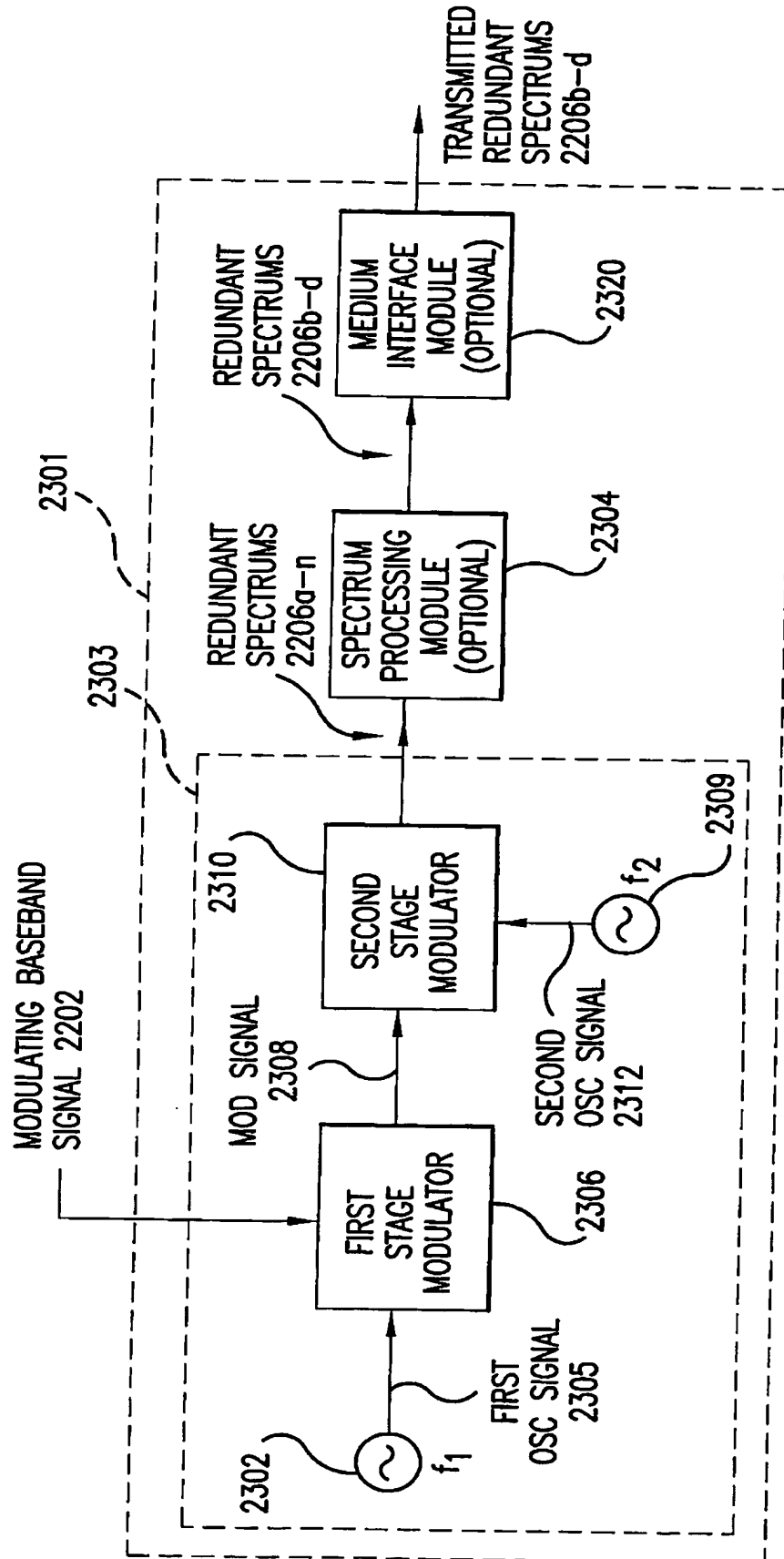


FIG. 23A

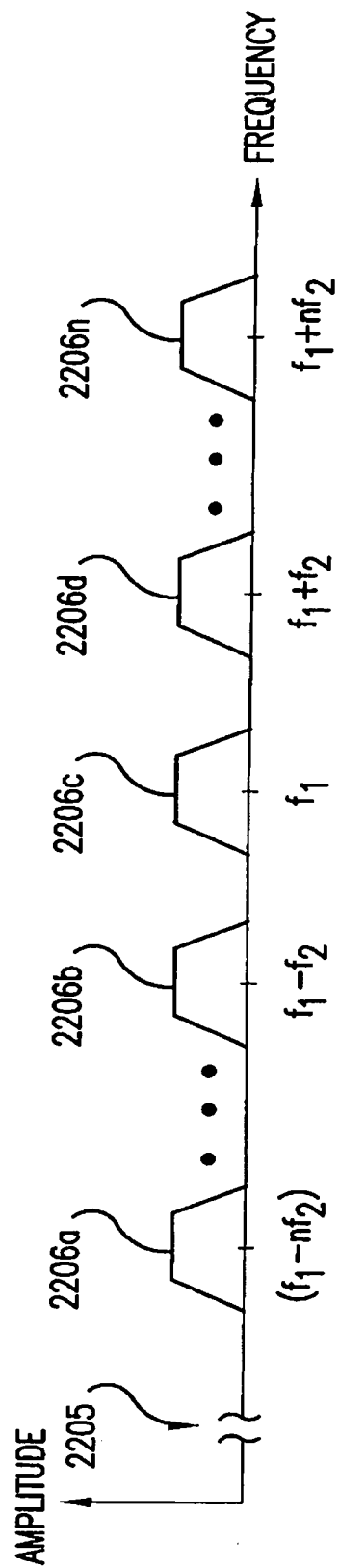


FIG. 23B

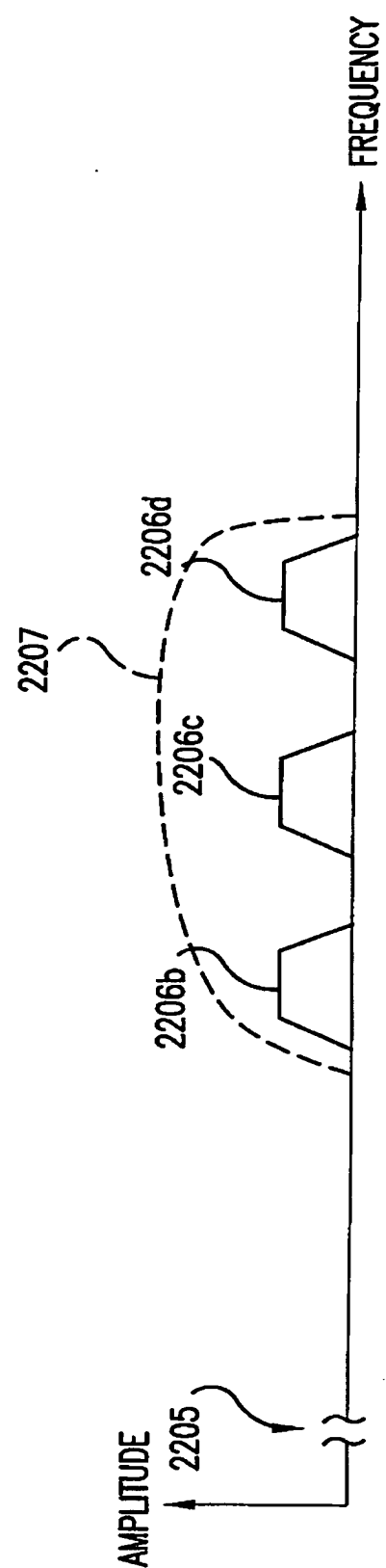


FIG. 23C

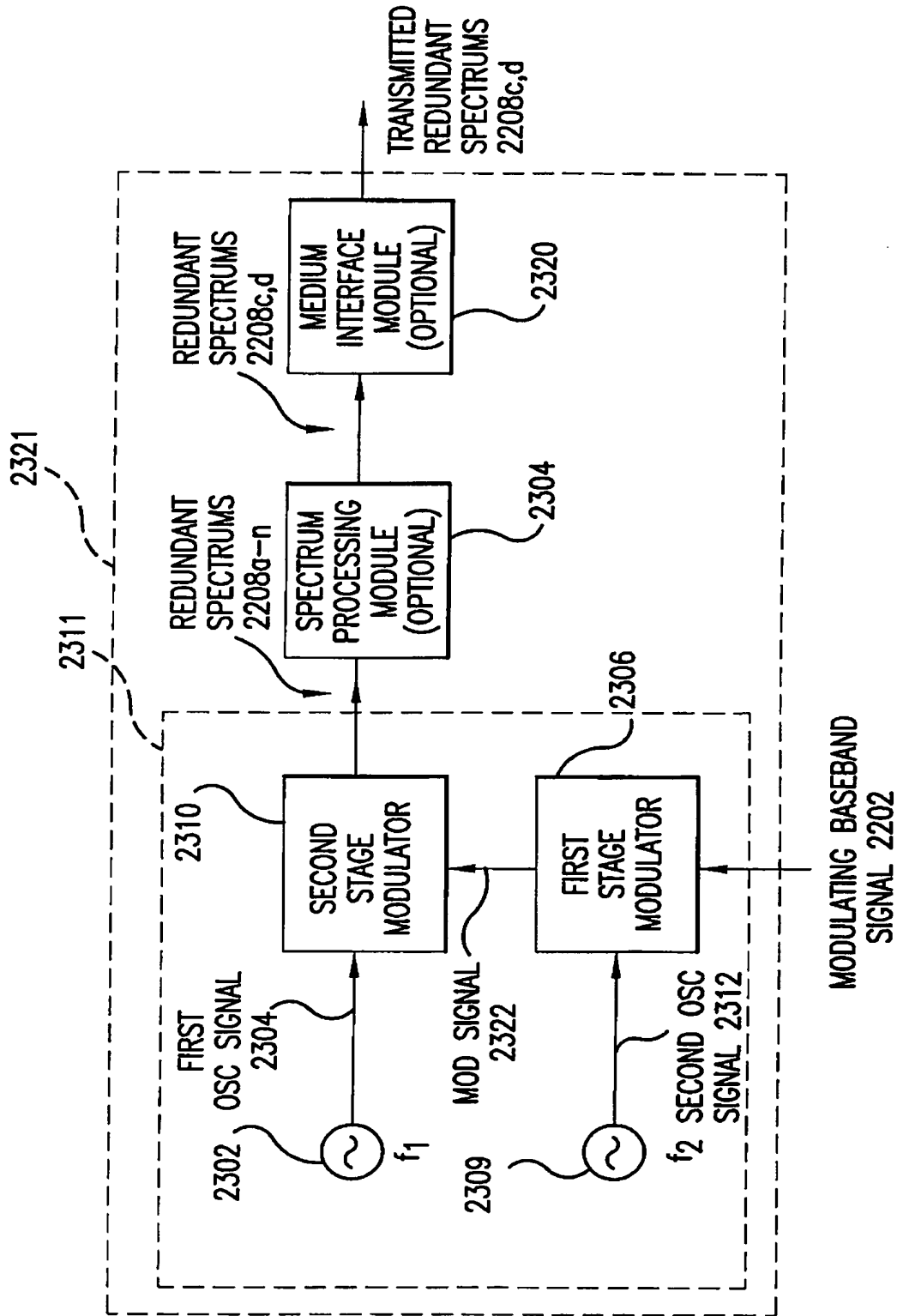


FIG. 23D

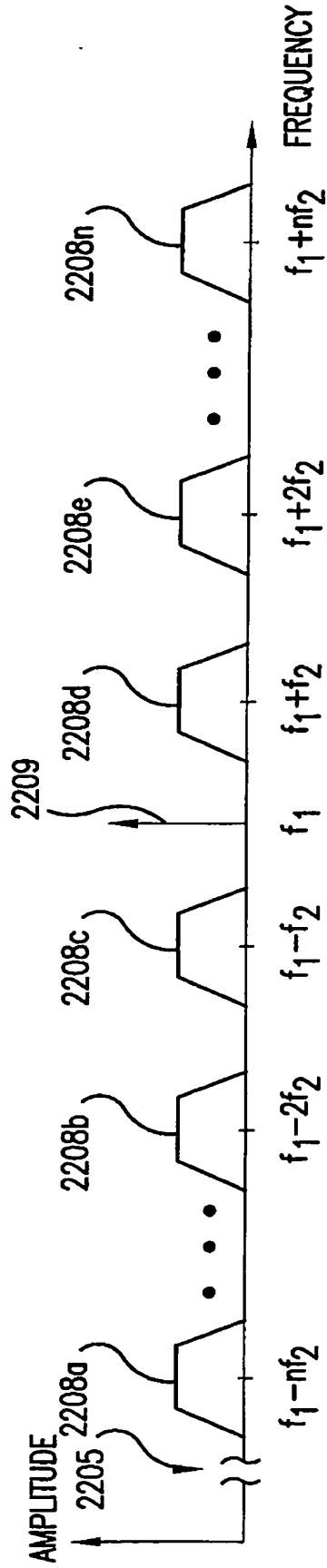


FIG. 23E

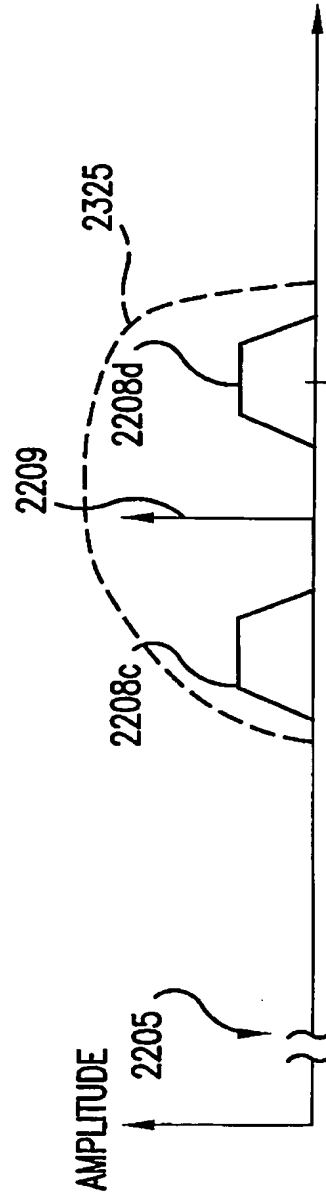


FIG. 23F

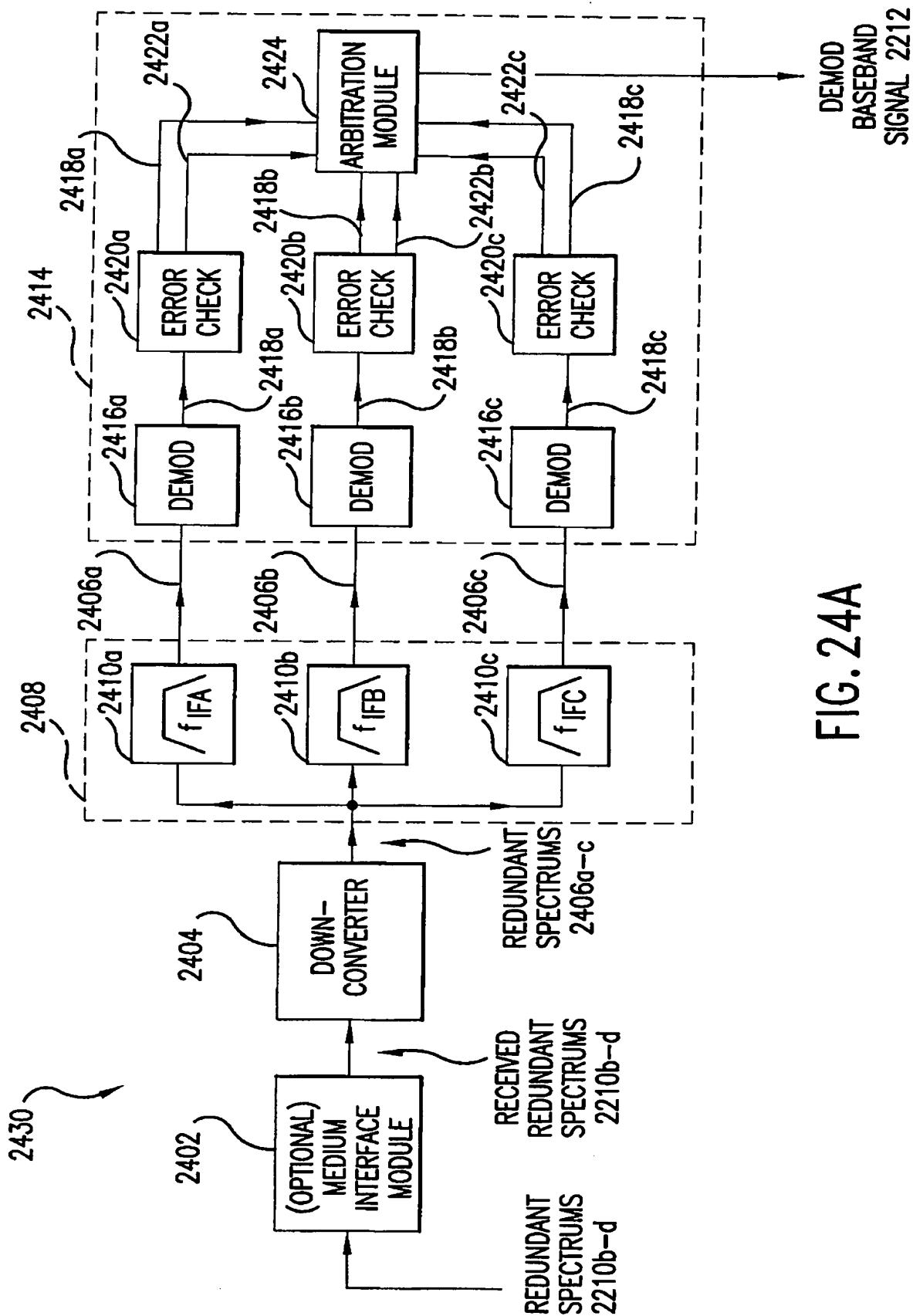


FIG. 24A

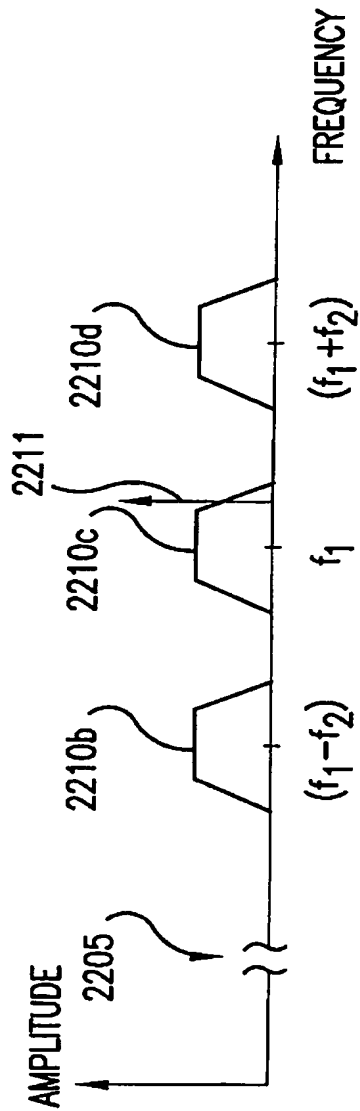


FIG. 24B

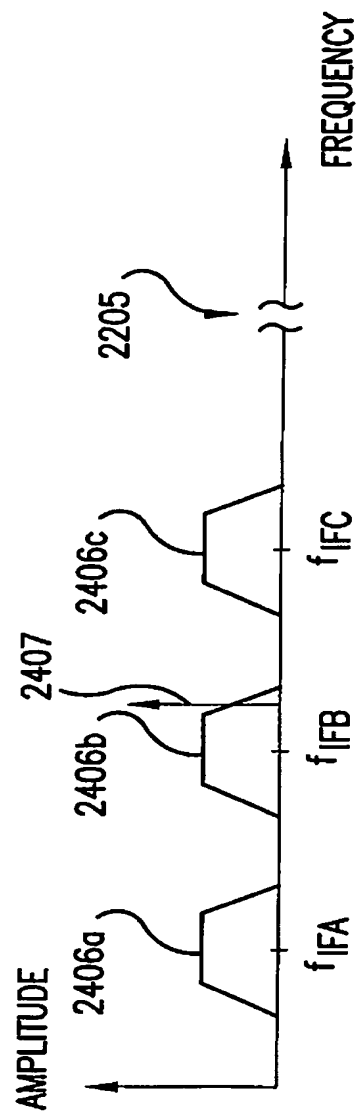
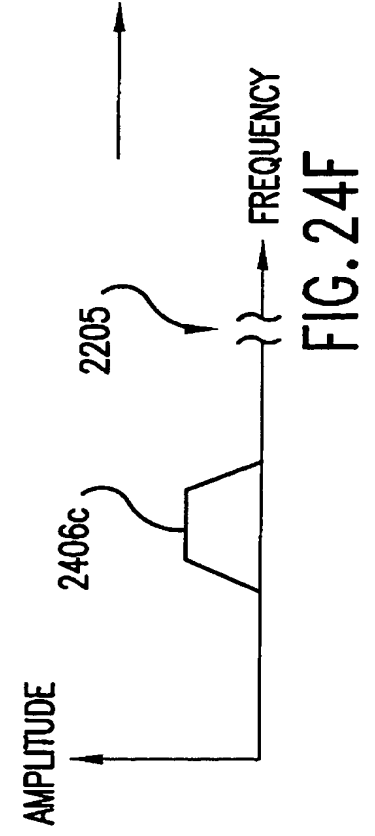
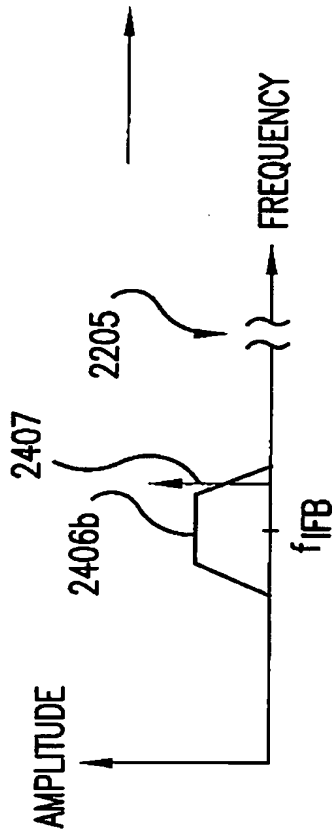
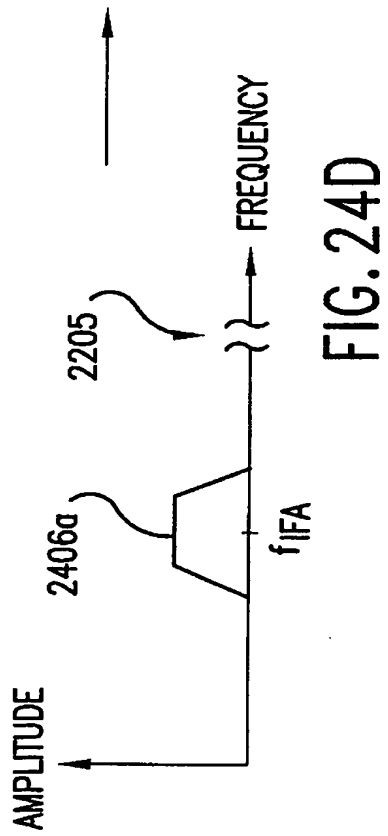
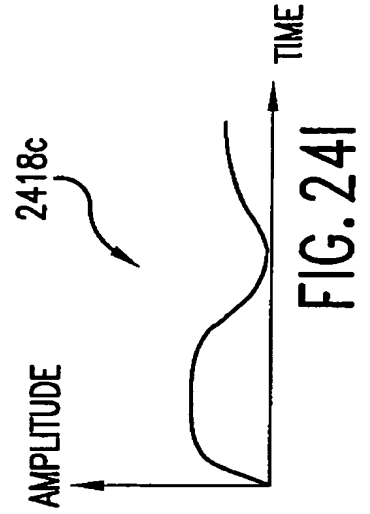
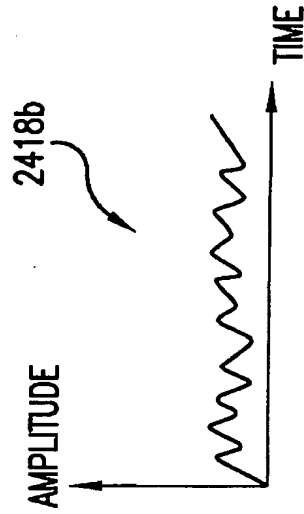
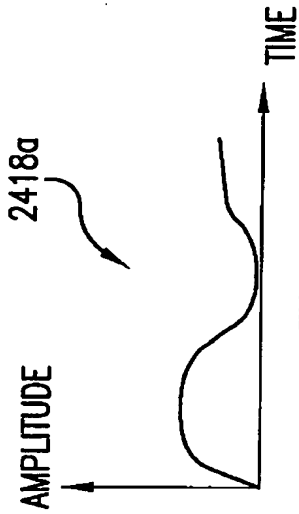


FIG. 24C



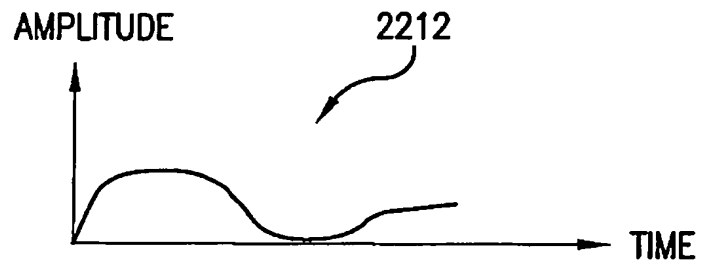


FIG. 24J

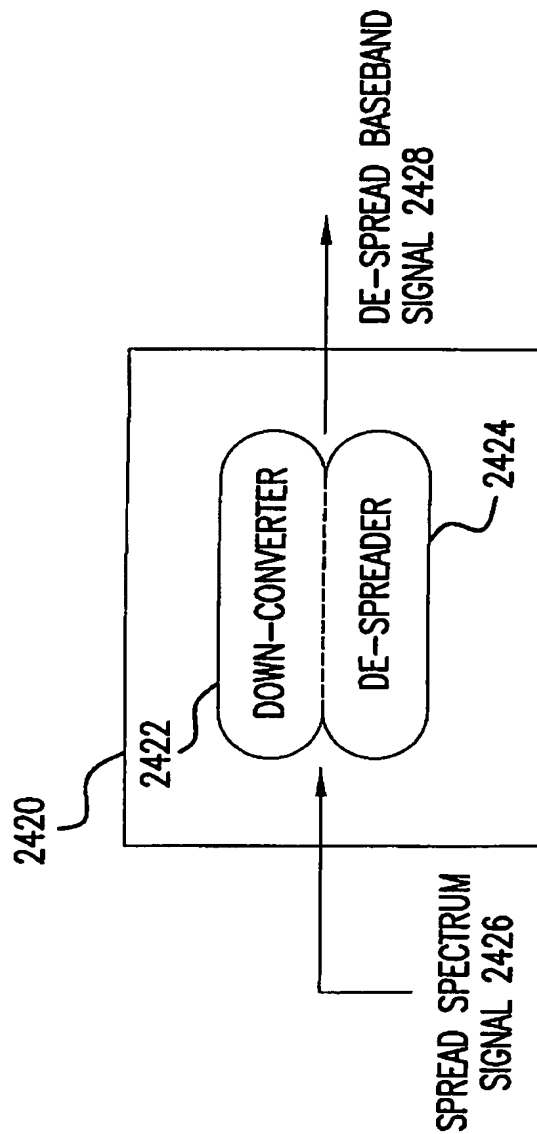


FIG. 24K

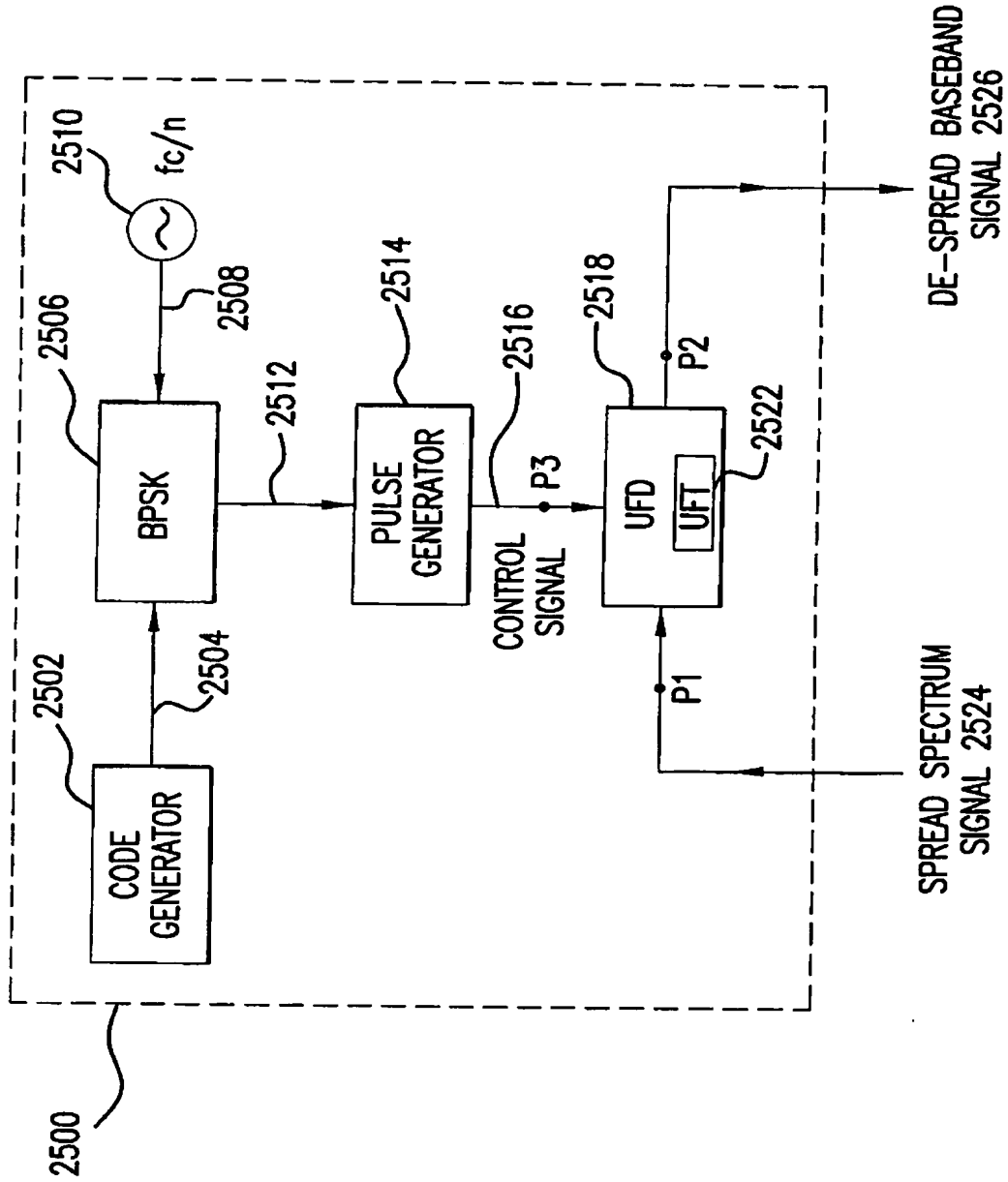
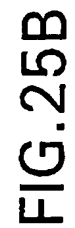
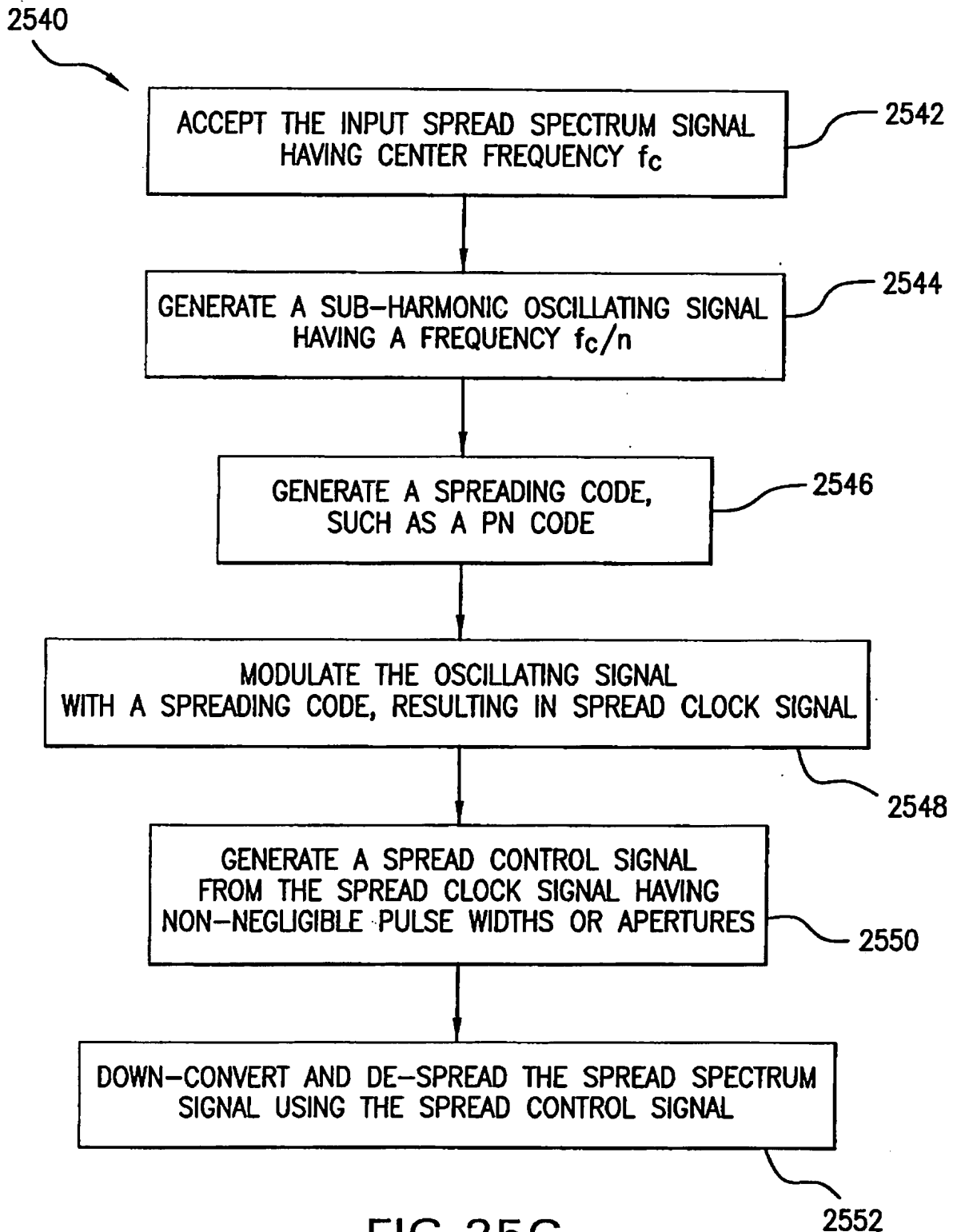


FIG. 25A





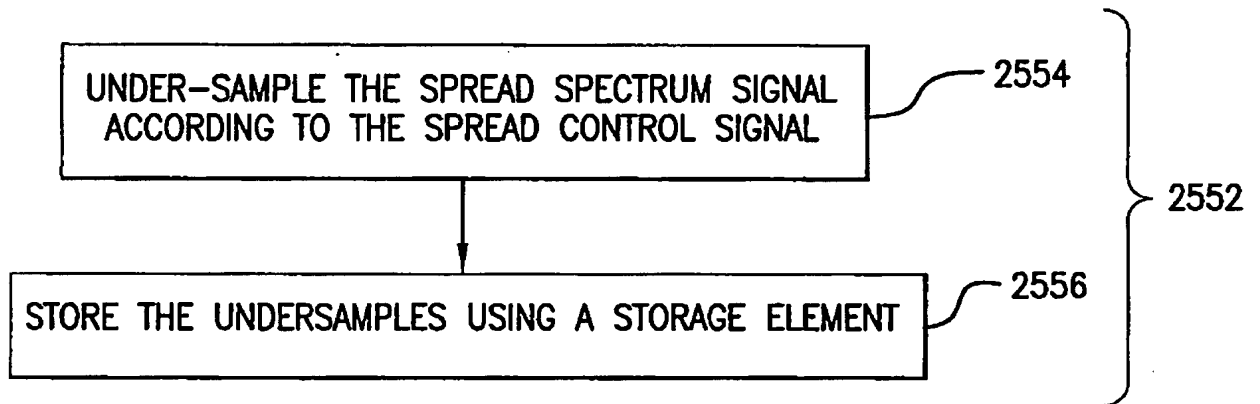


FIG. 25D

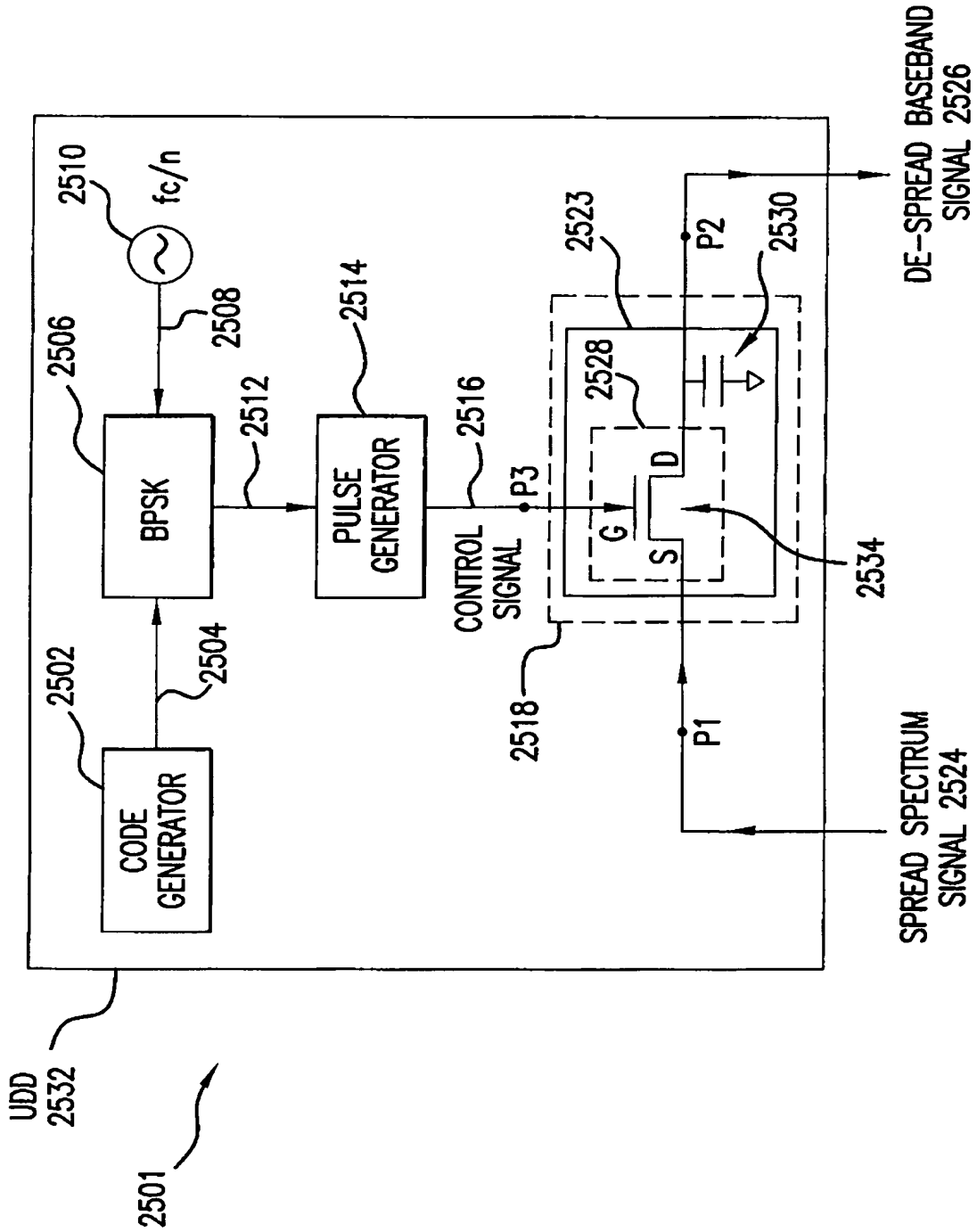


FIG. 25E

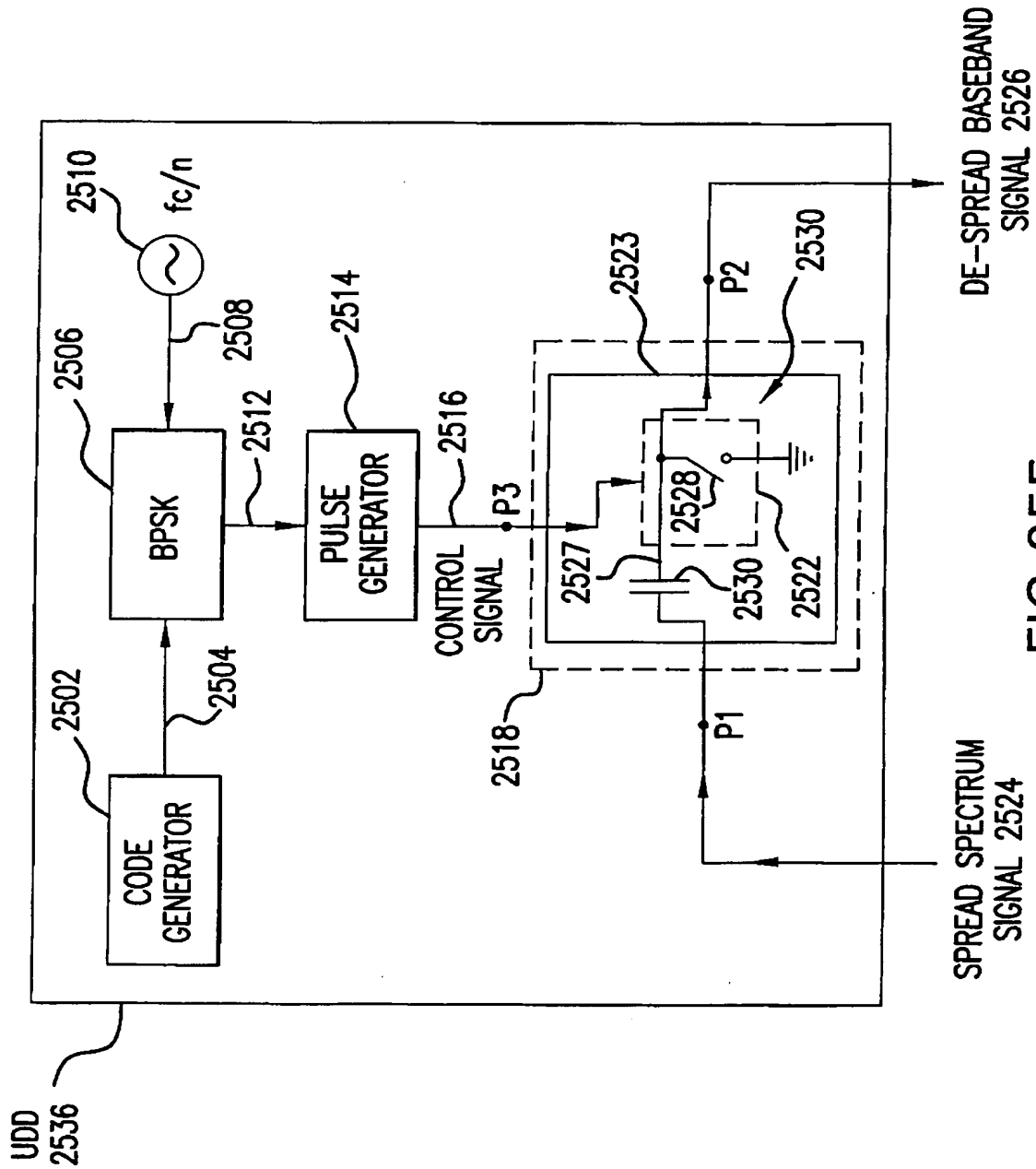


FIG. 25F

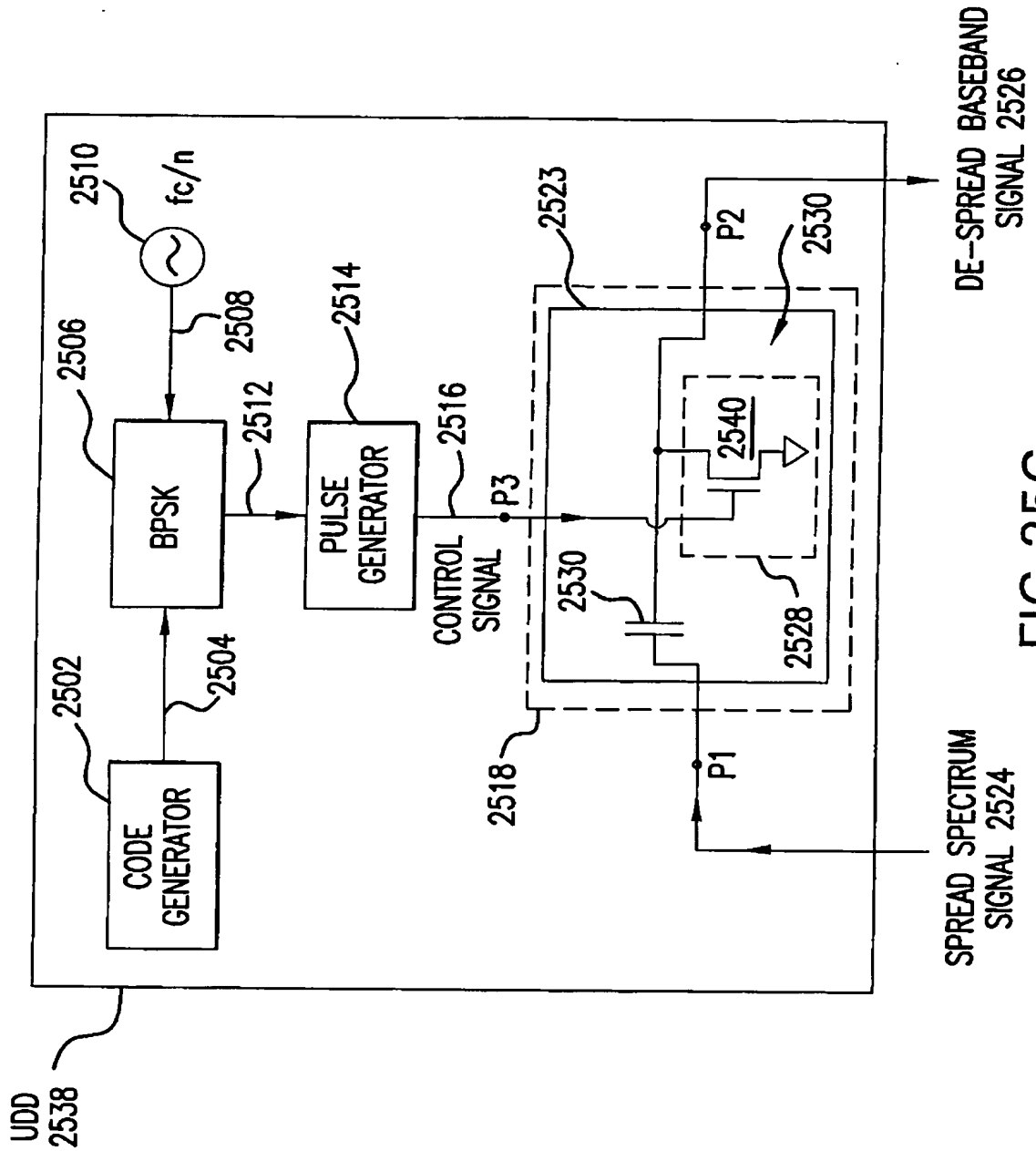


FIG. 25G

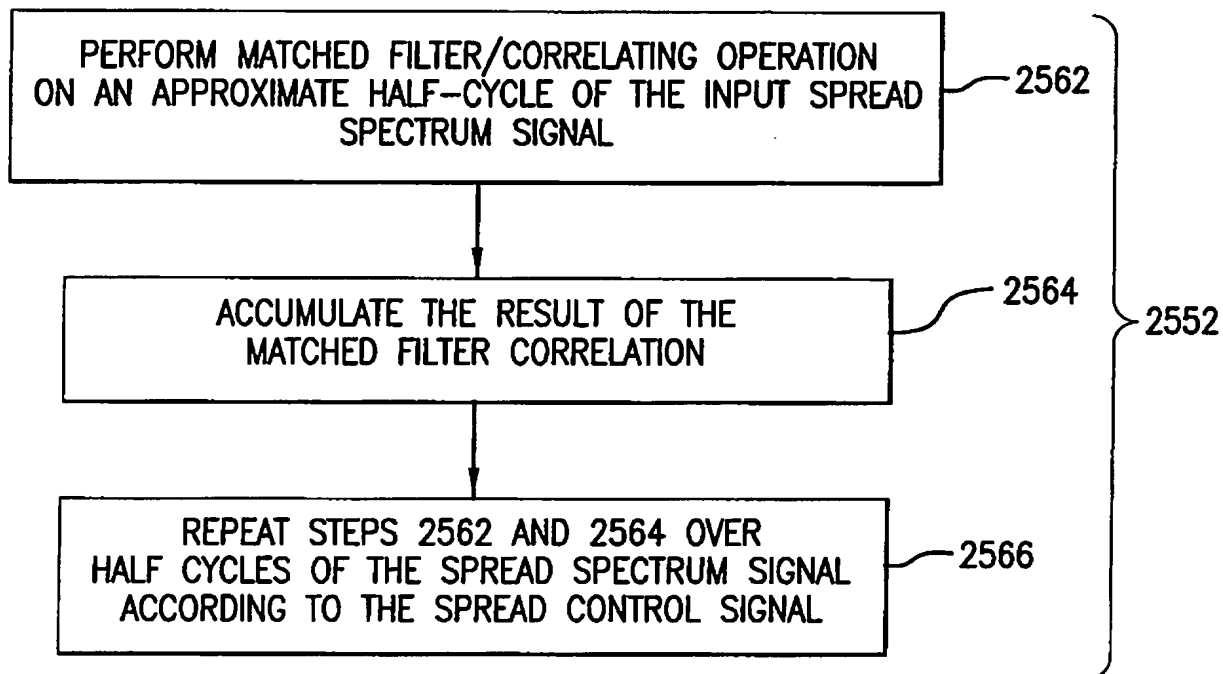


FIG.25H

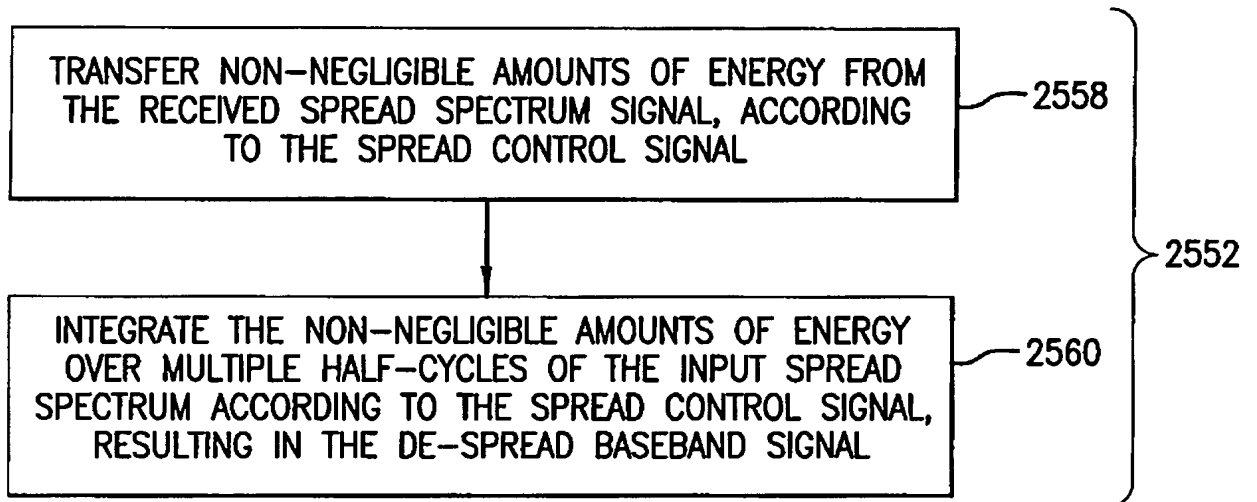


FIG.25I

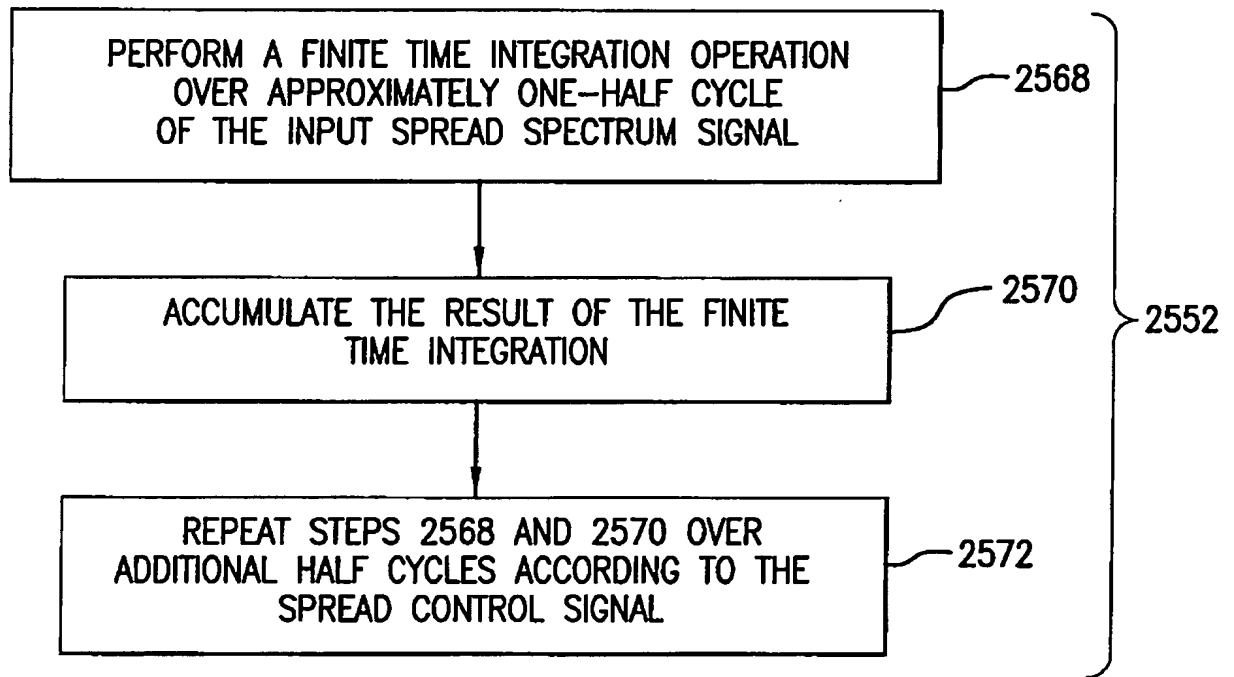


FIG.25J

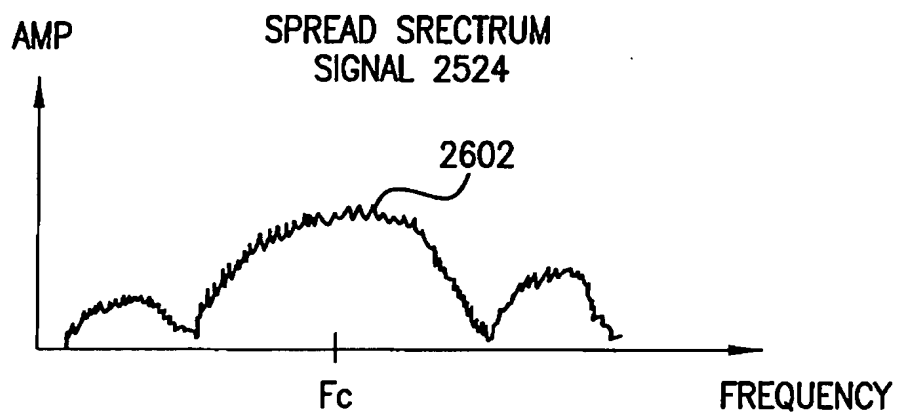
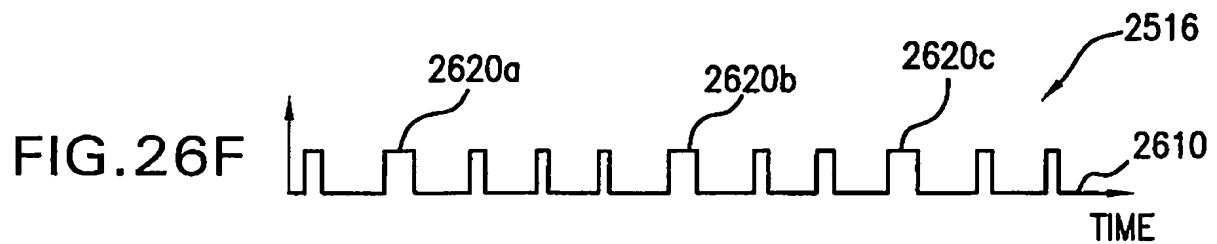
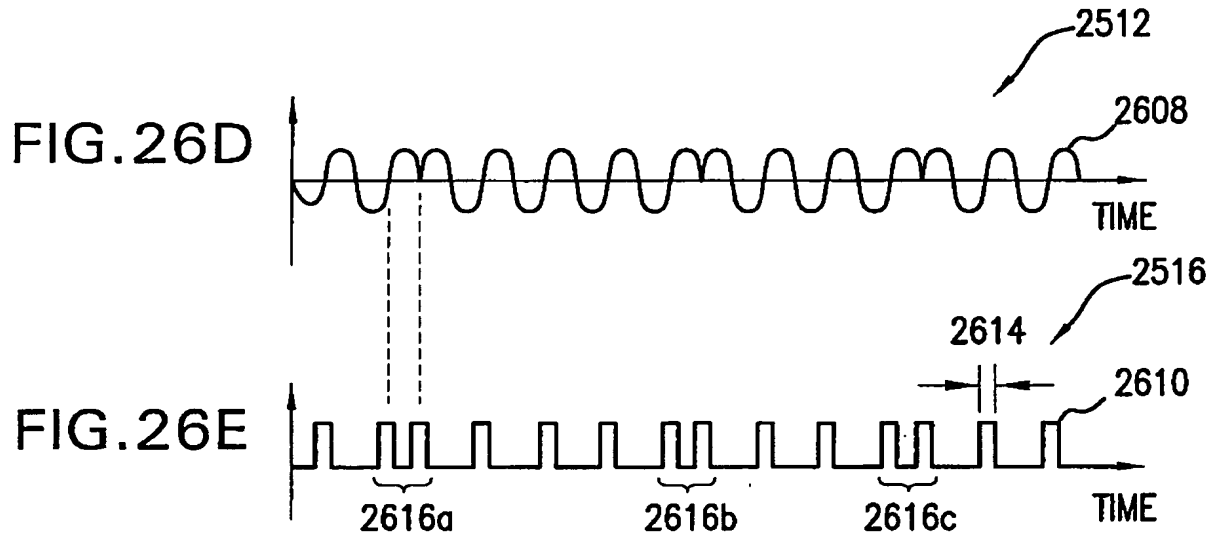
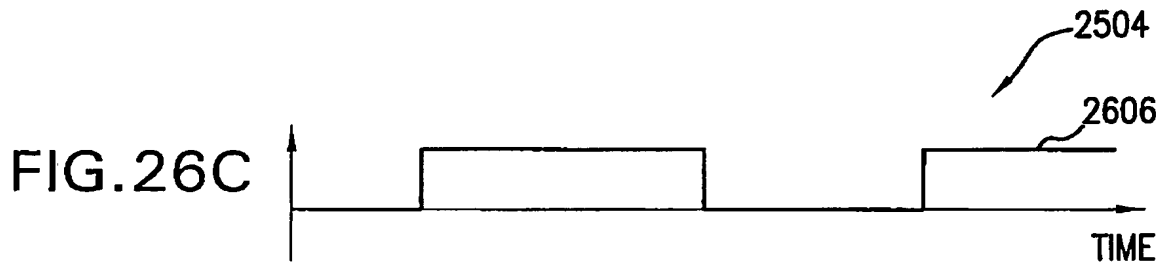
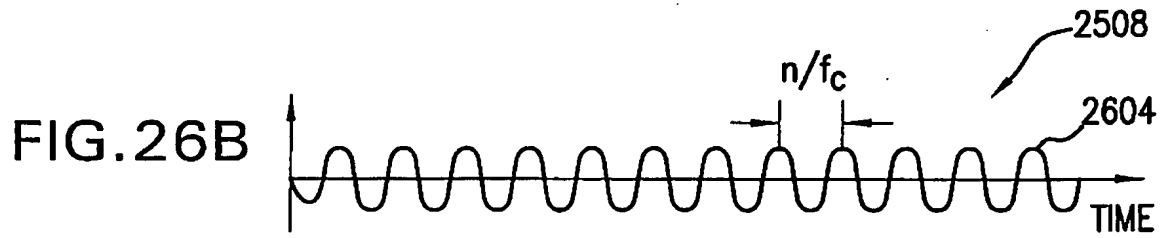


FIG.26A



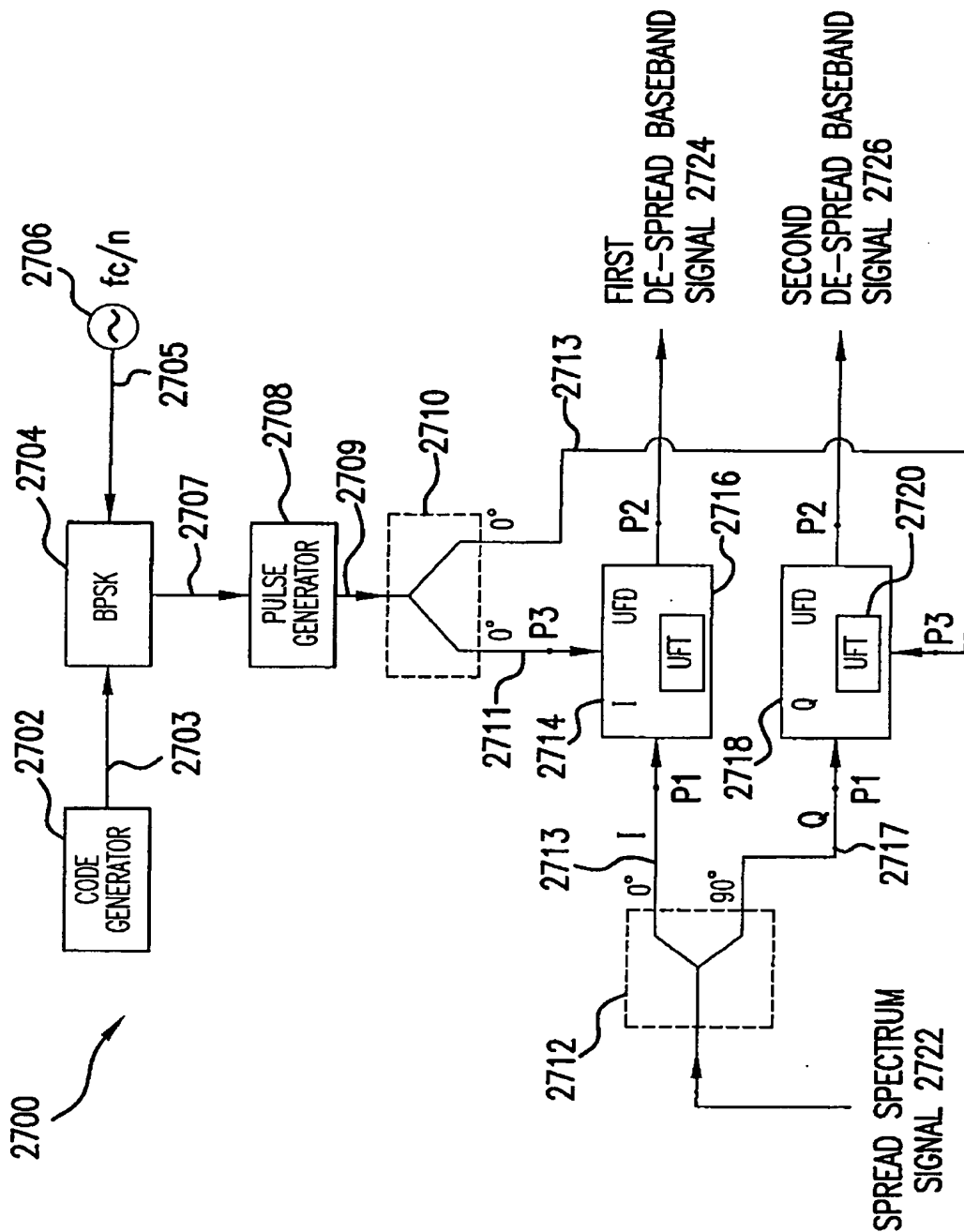


FIG.27

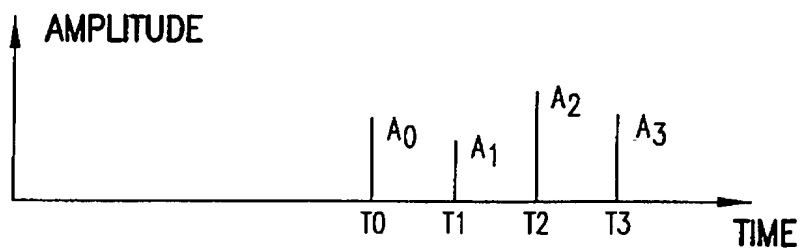


FIG. 28A

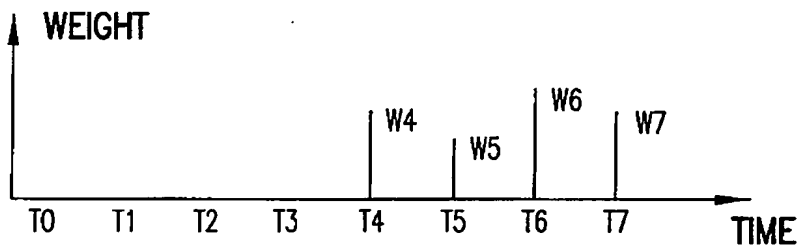


FIG. 28B

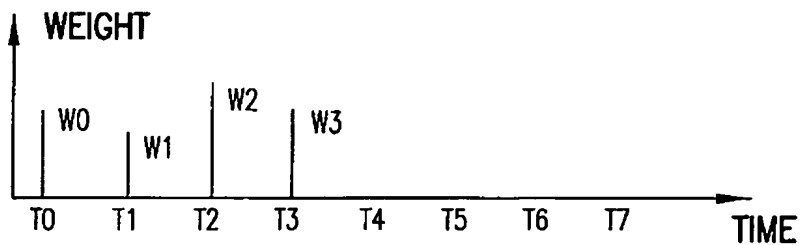


FIG. 28C

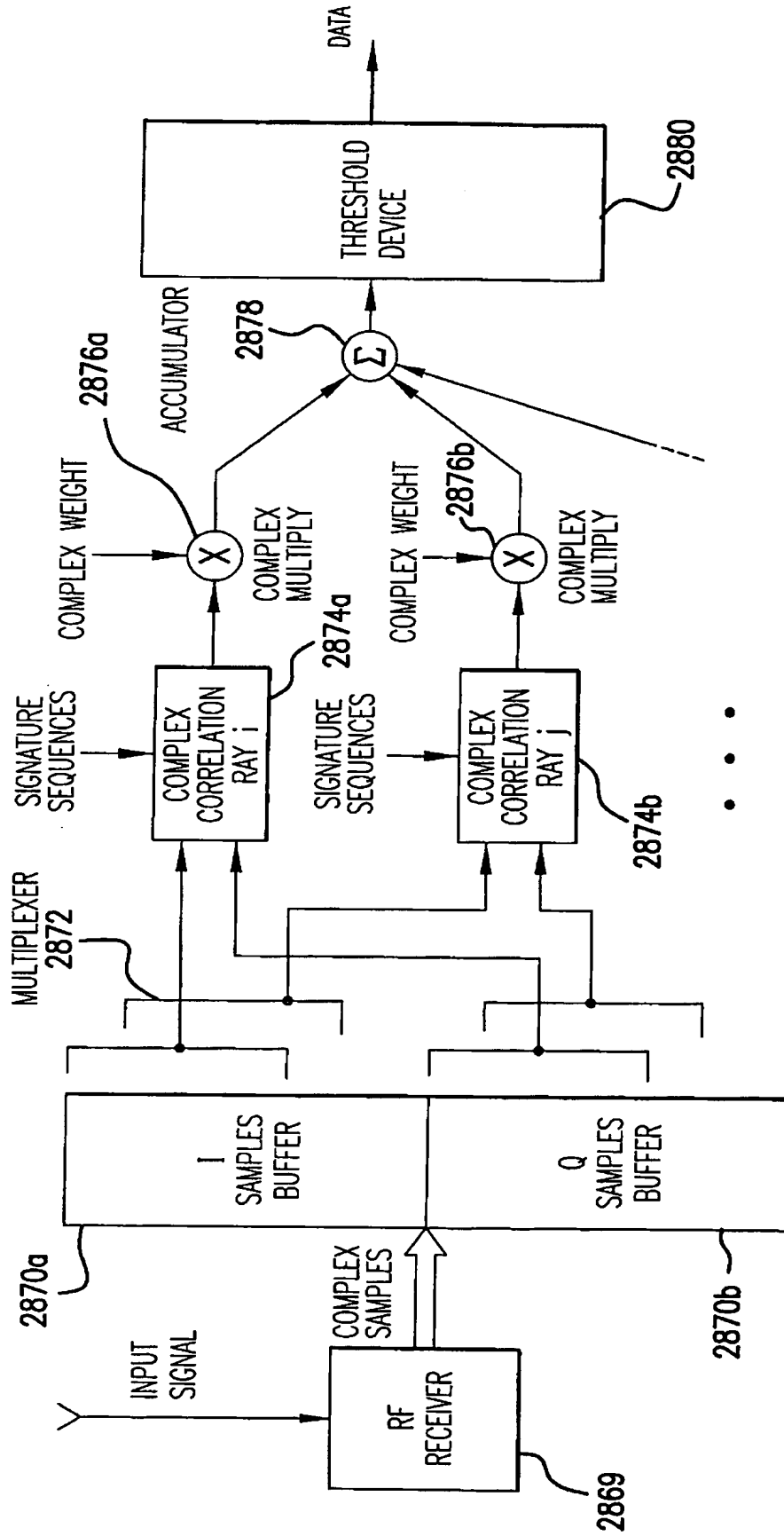


FIG. 28D

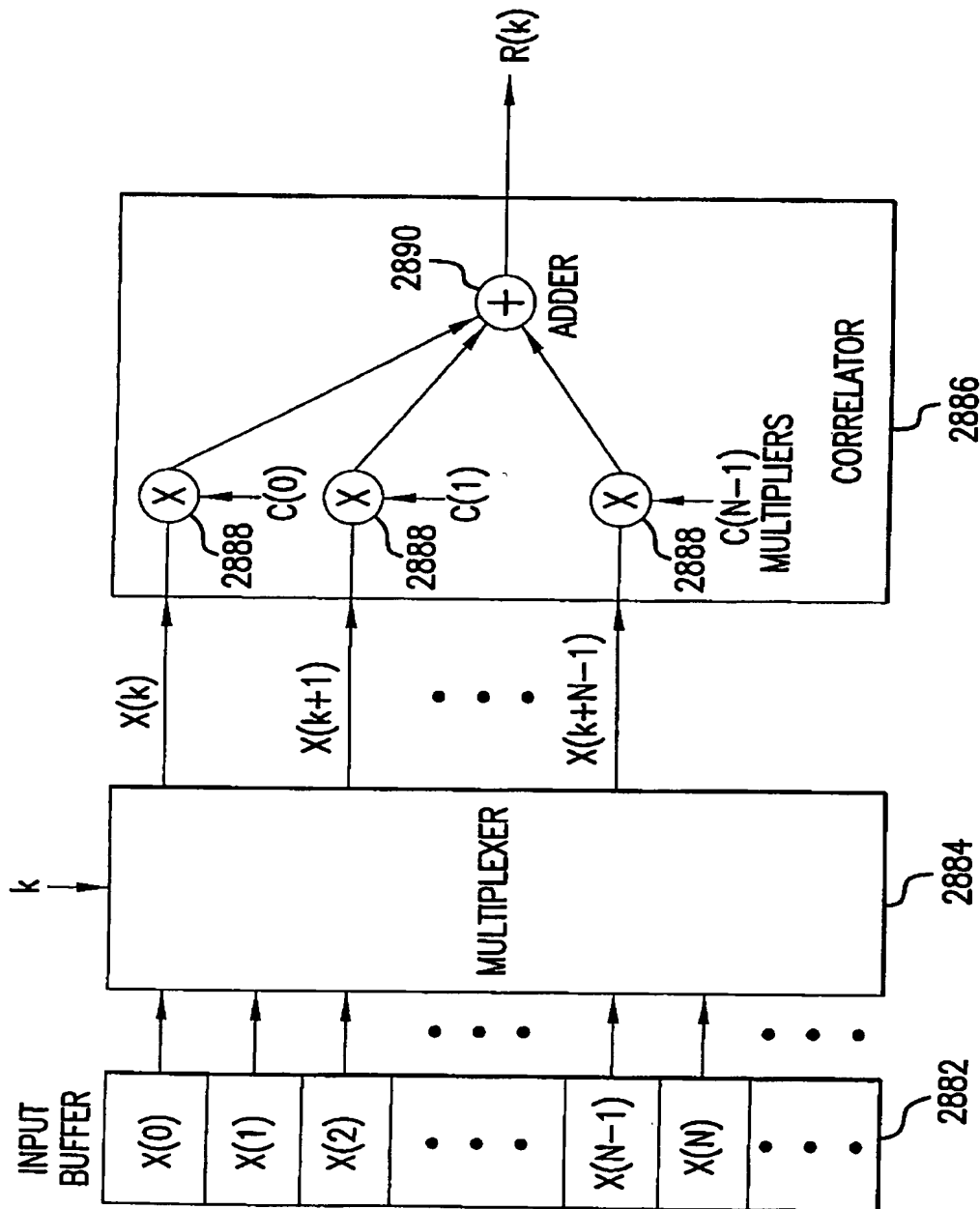


FIG. 28E

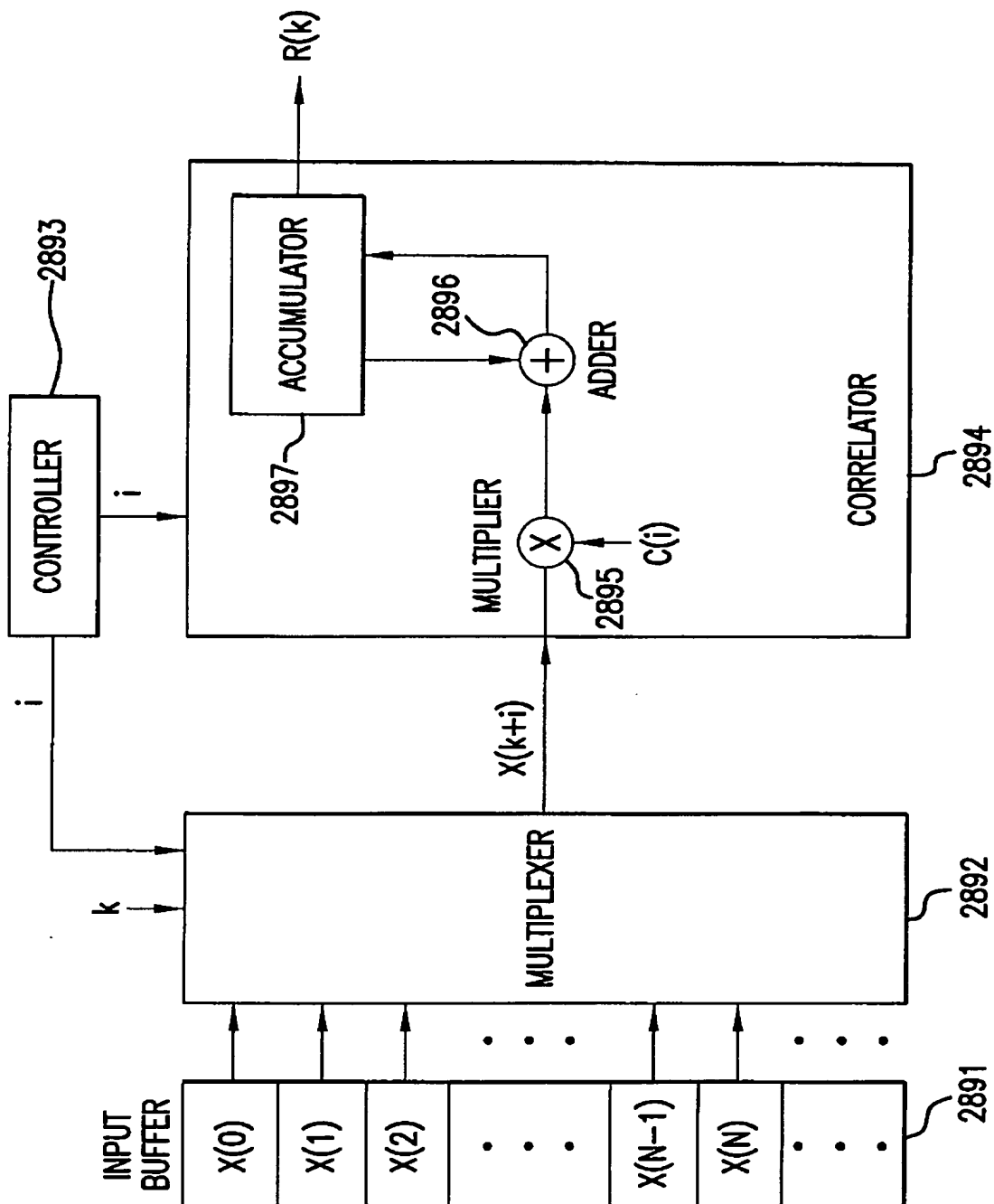


FIG. 28F

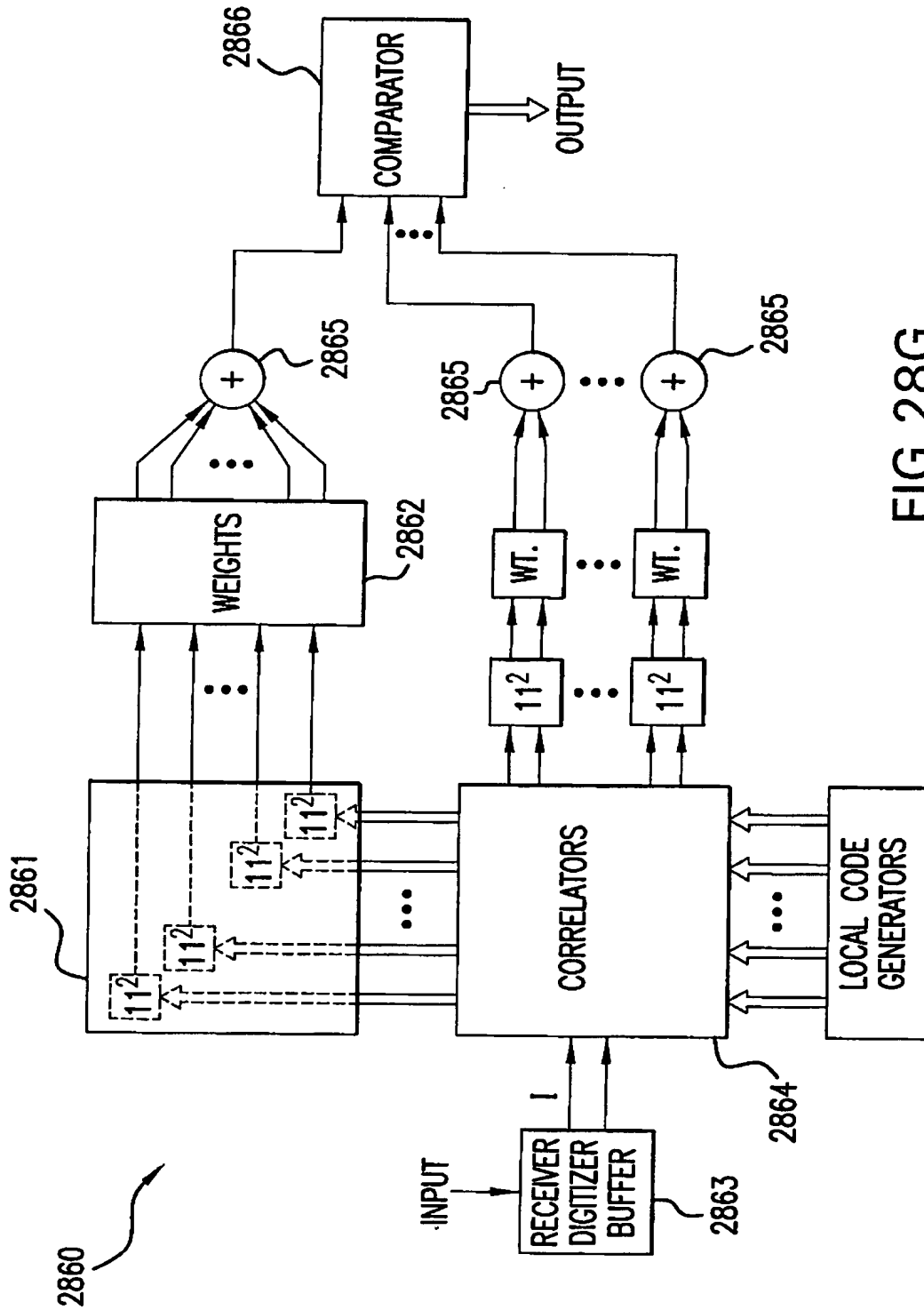


FIG. 28G

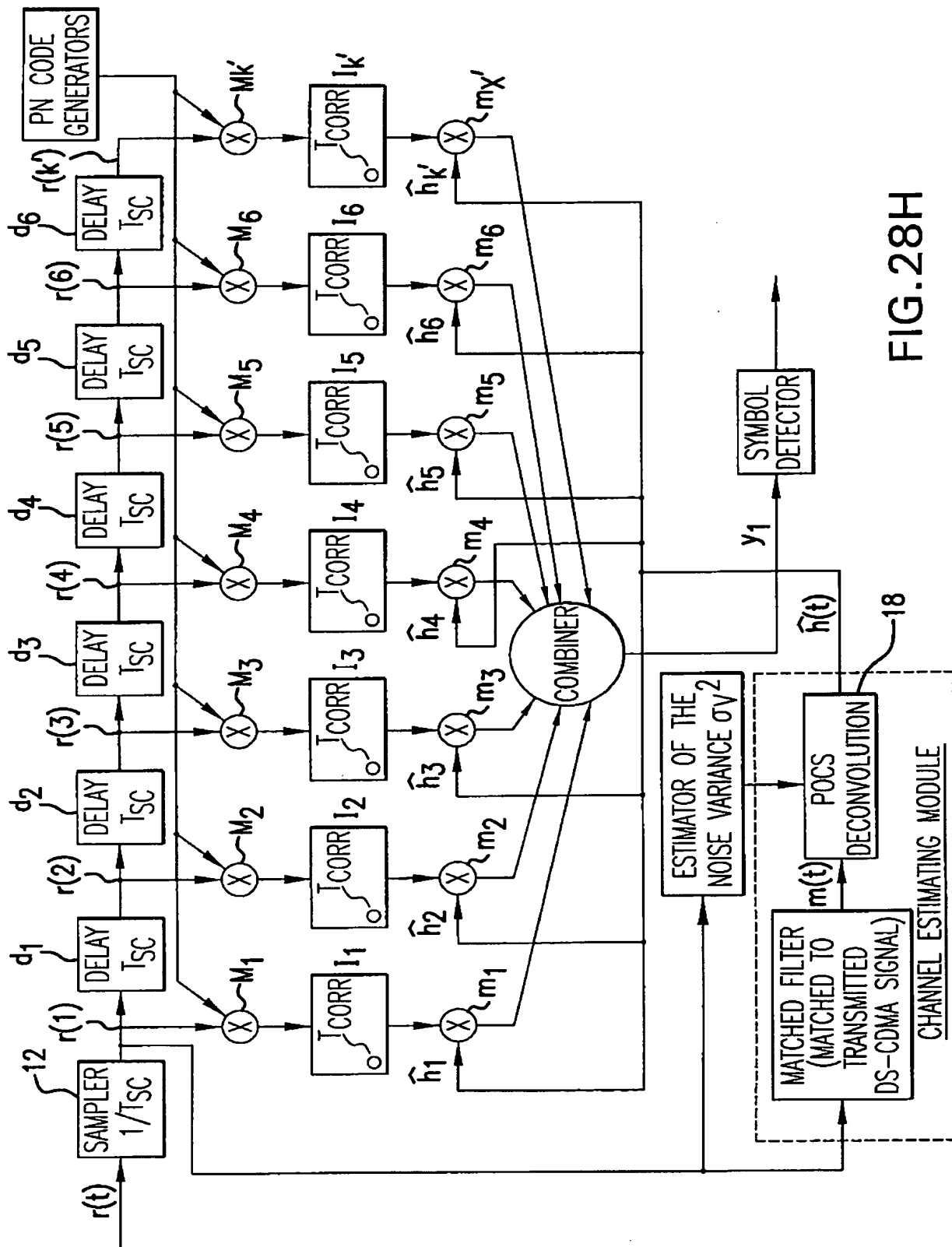


FIG. 28H

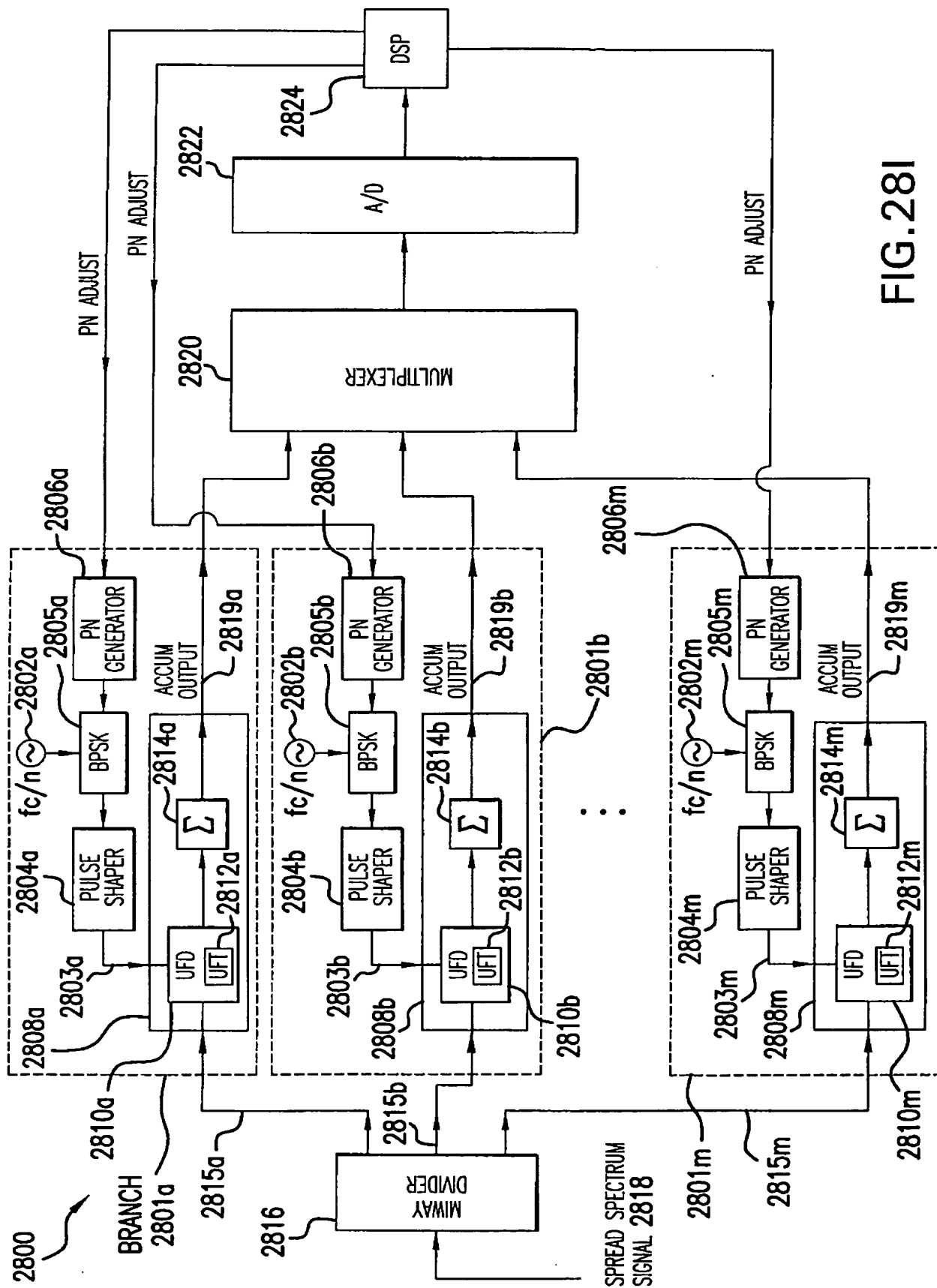


FIG. 28I

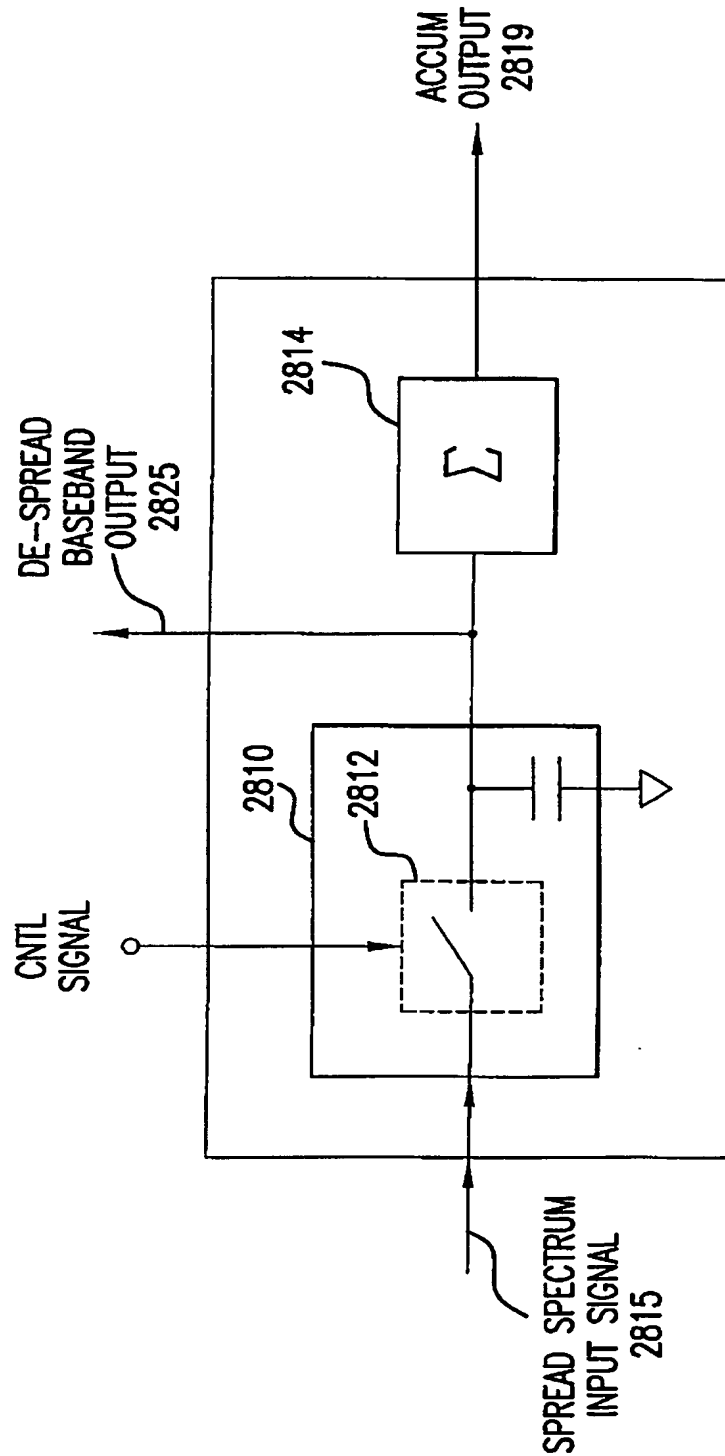


FIG. 28J

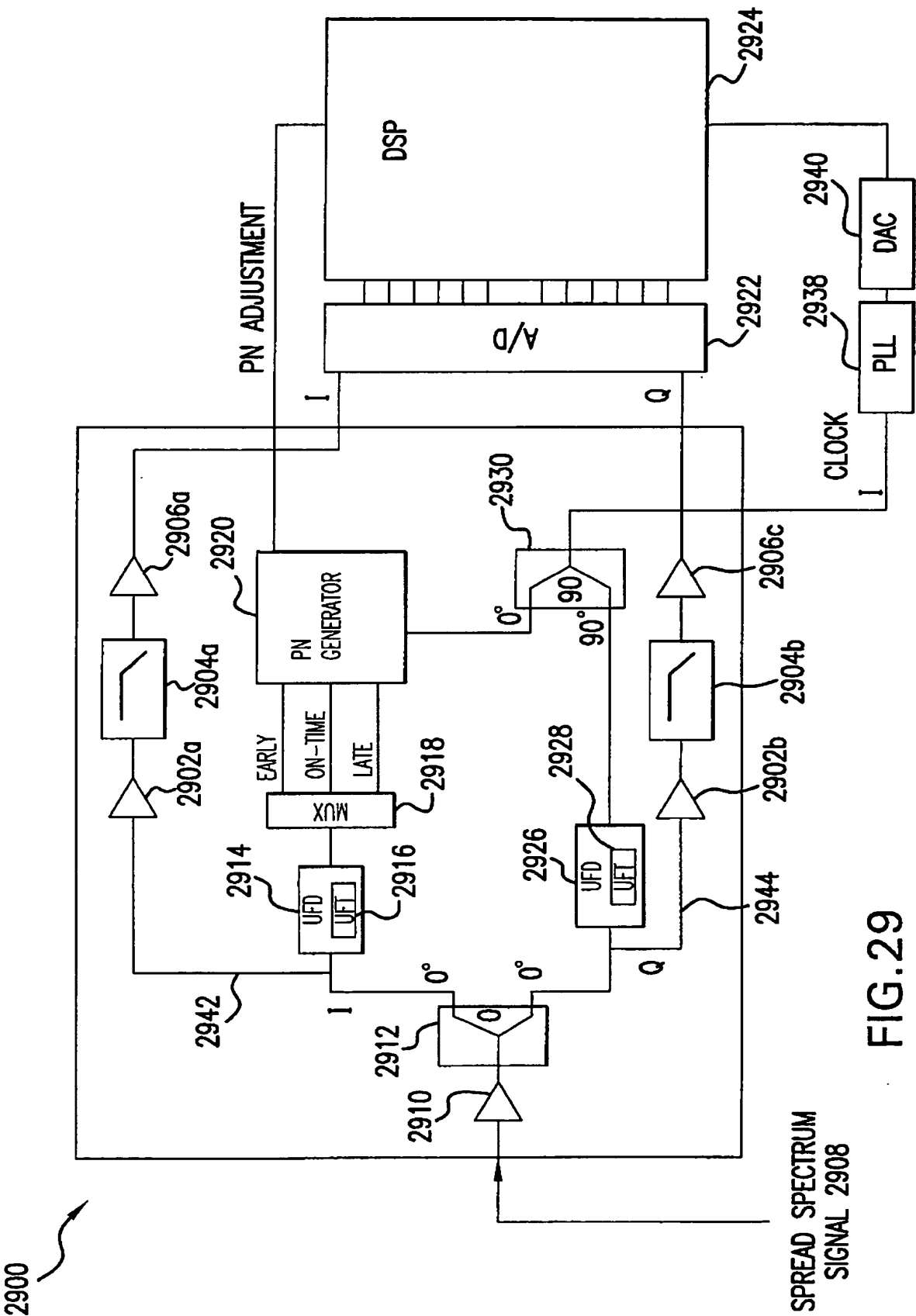
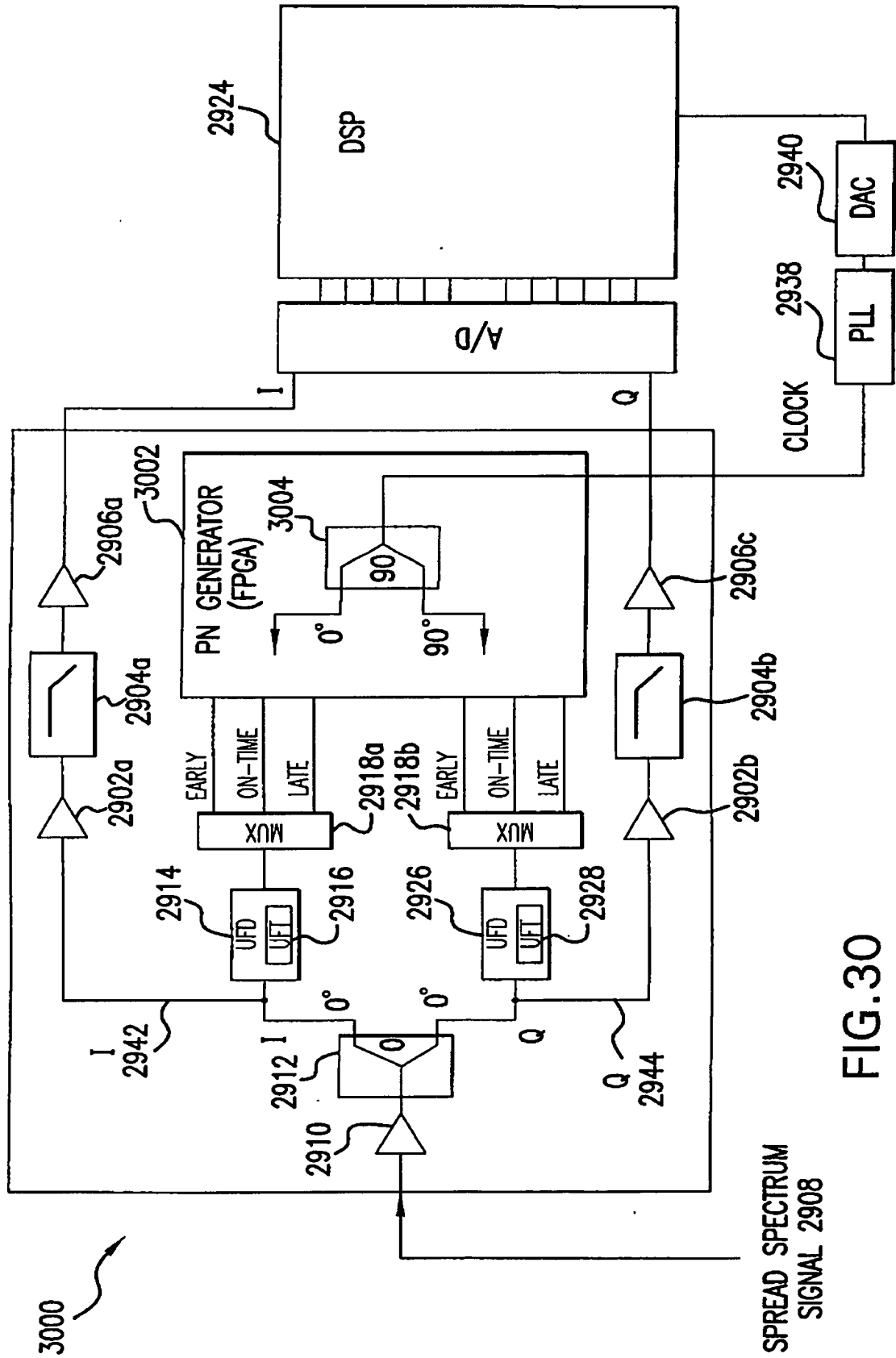


FIG.29



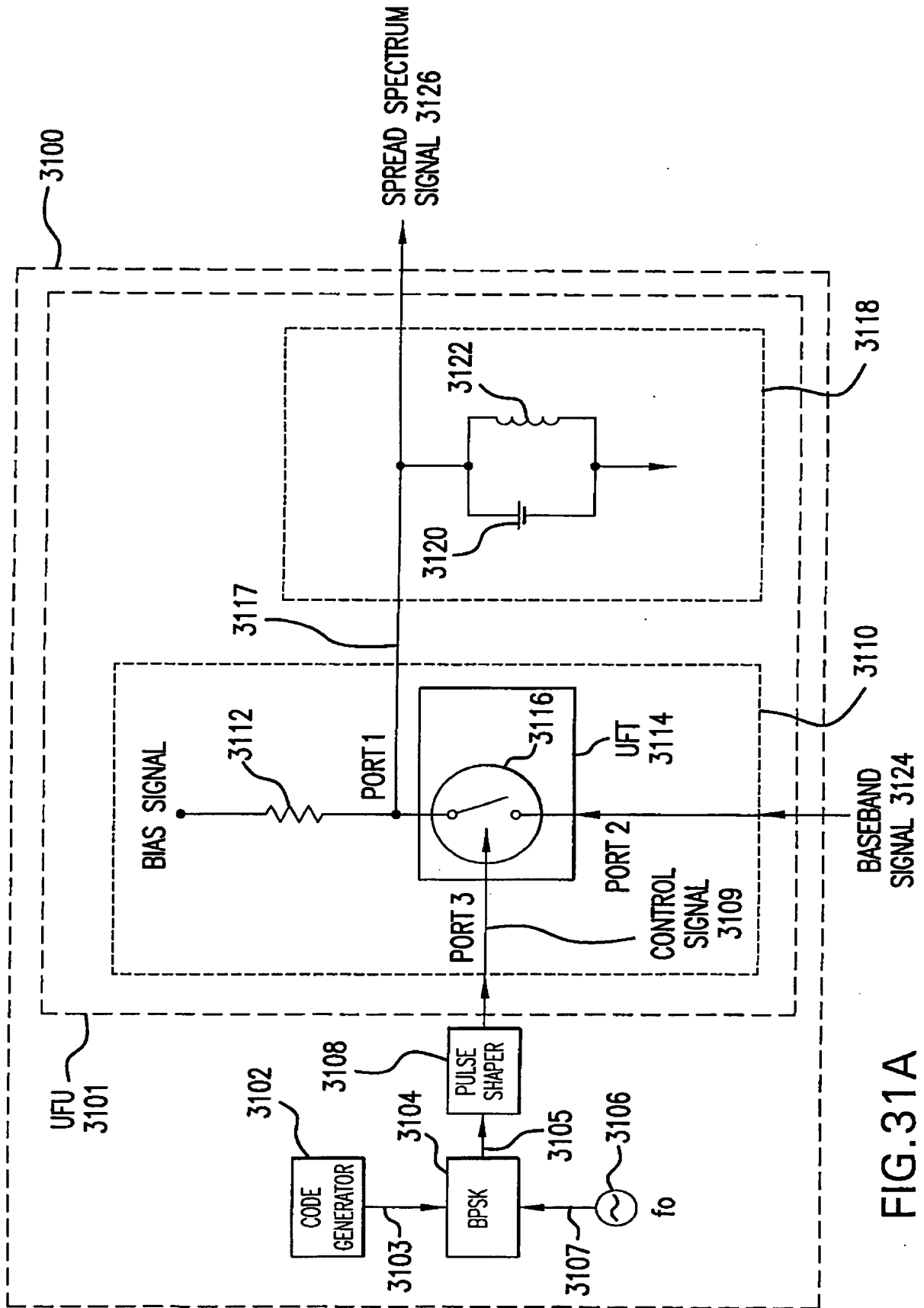


FIG. 31A

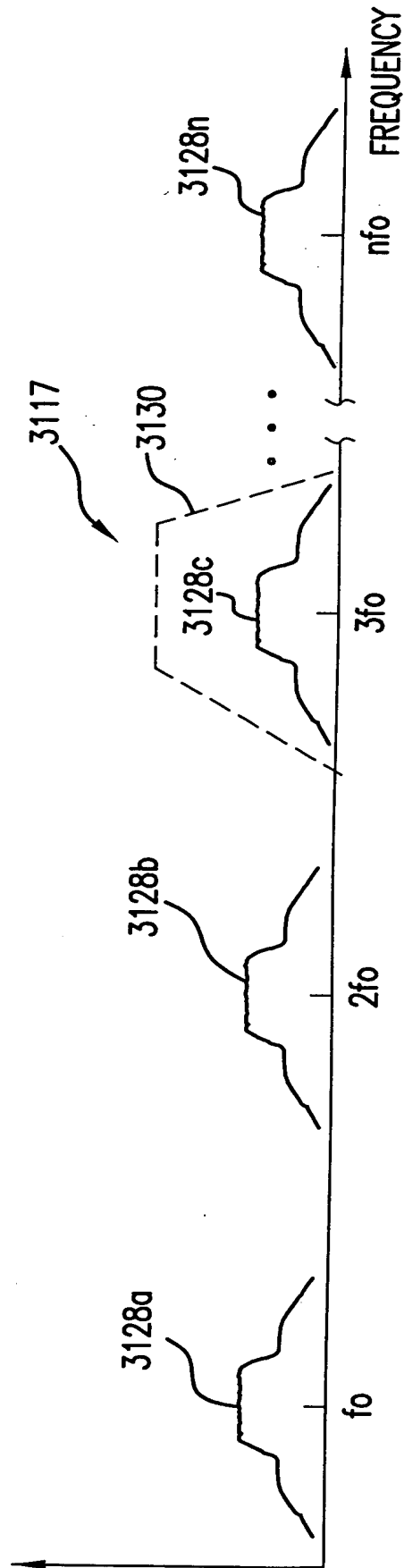


FIG. 31B

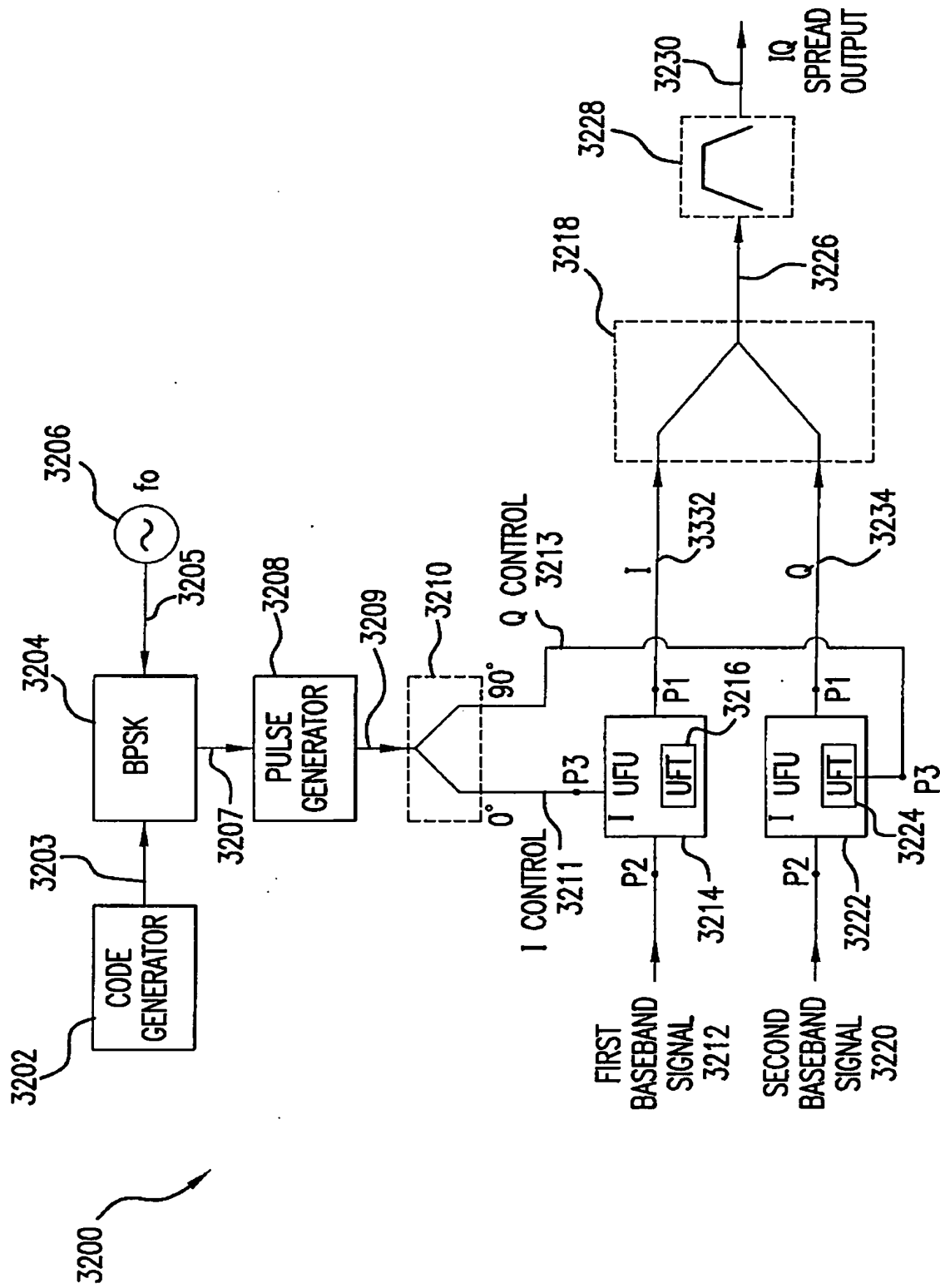


FIG.32

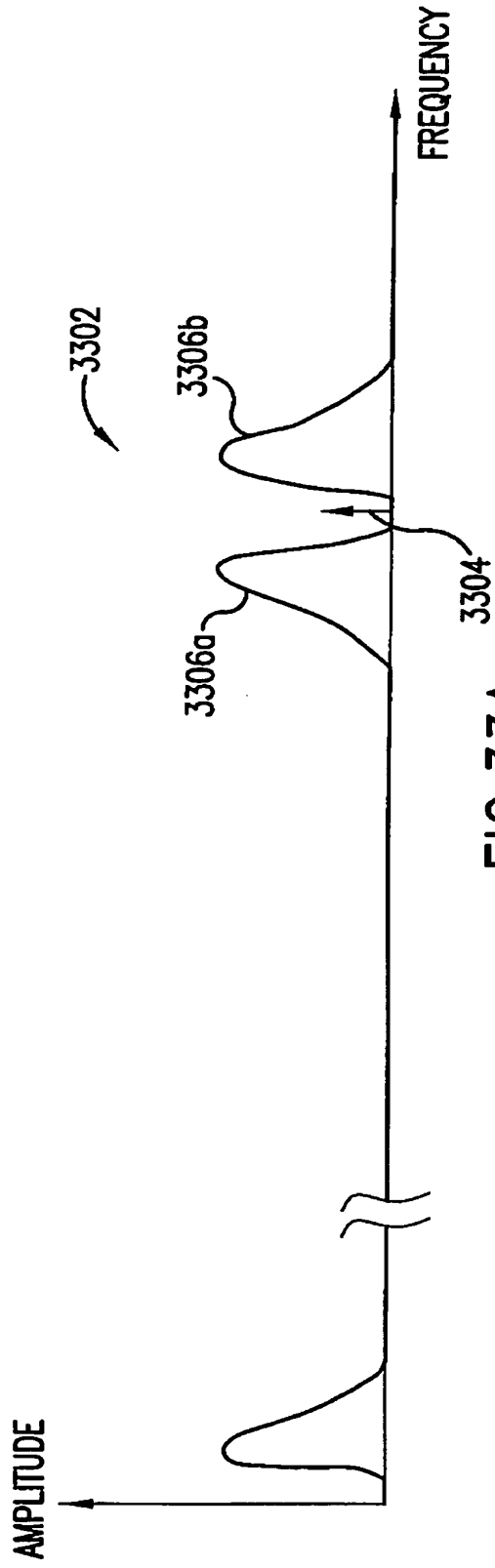


FIG. 33A

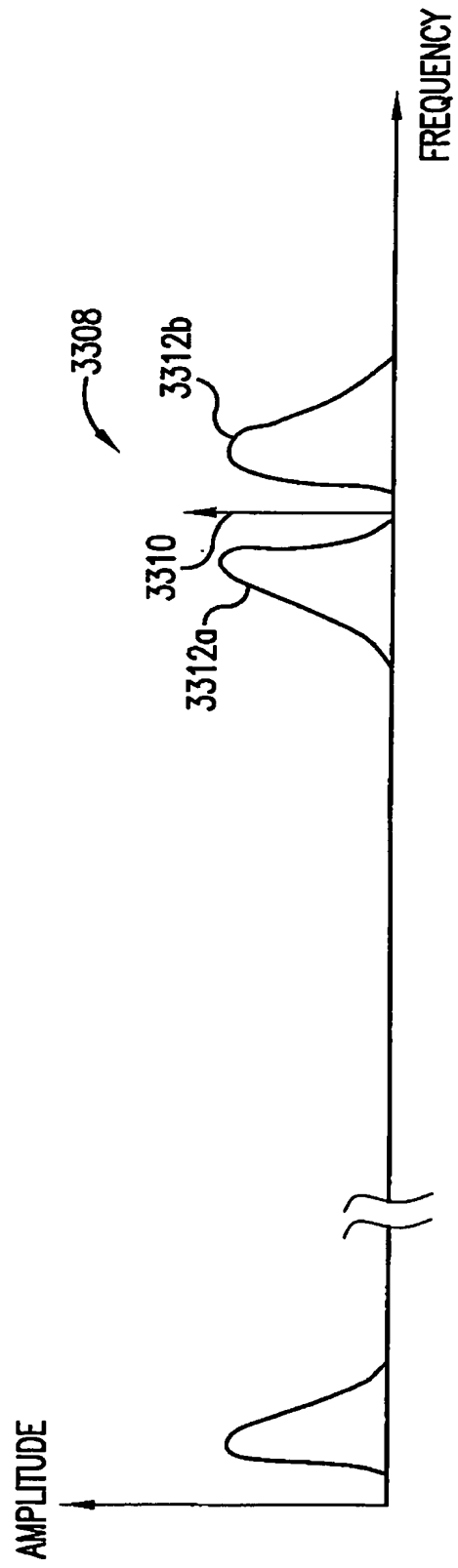


FIG. 33B

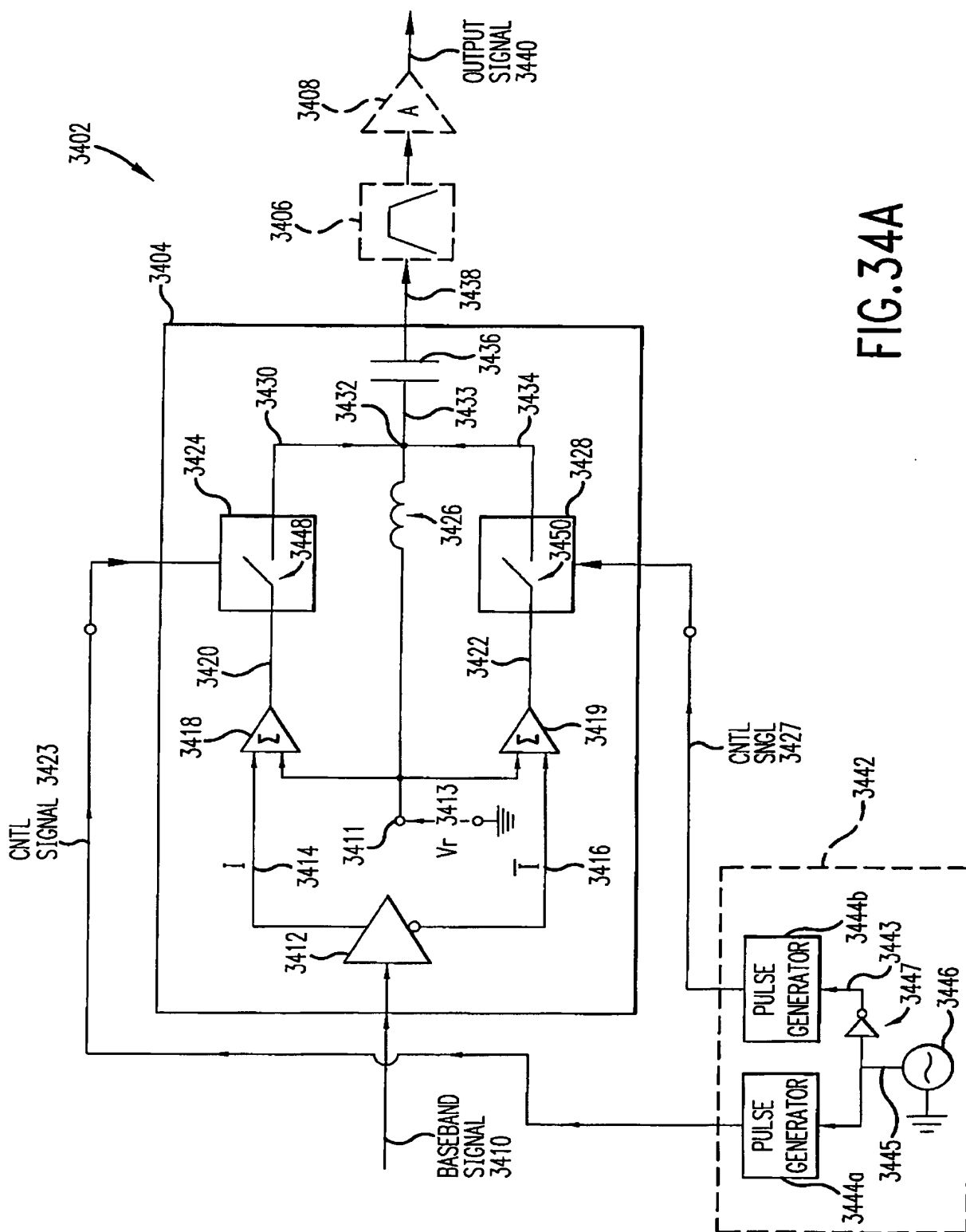
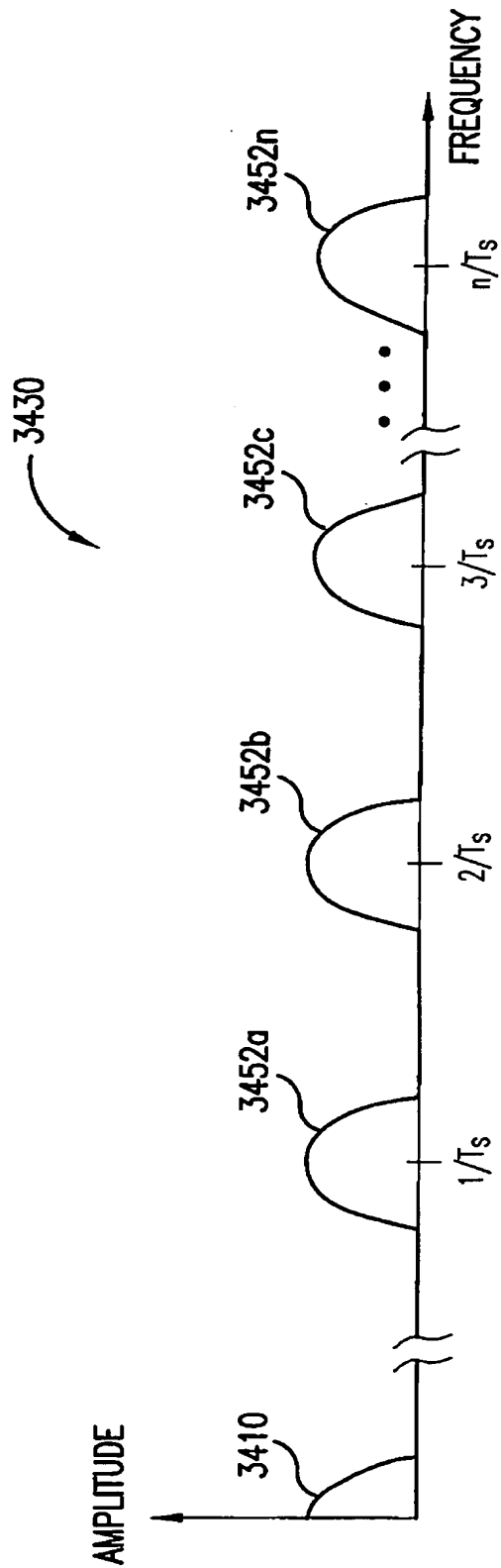


FIG. 34A



**FIG. 34B**

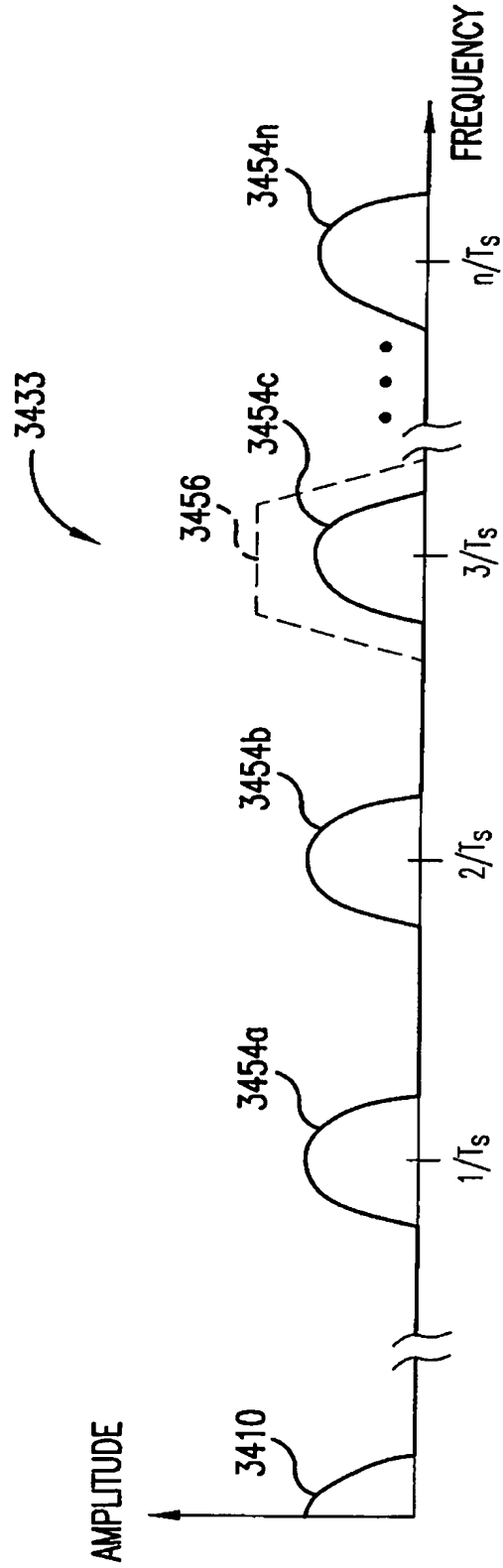


FIG. 34C

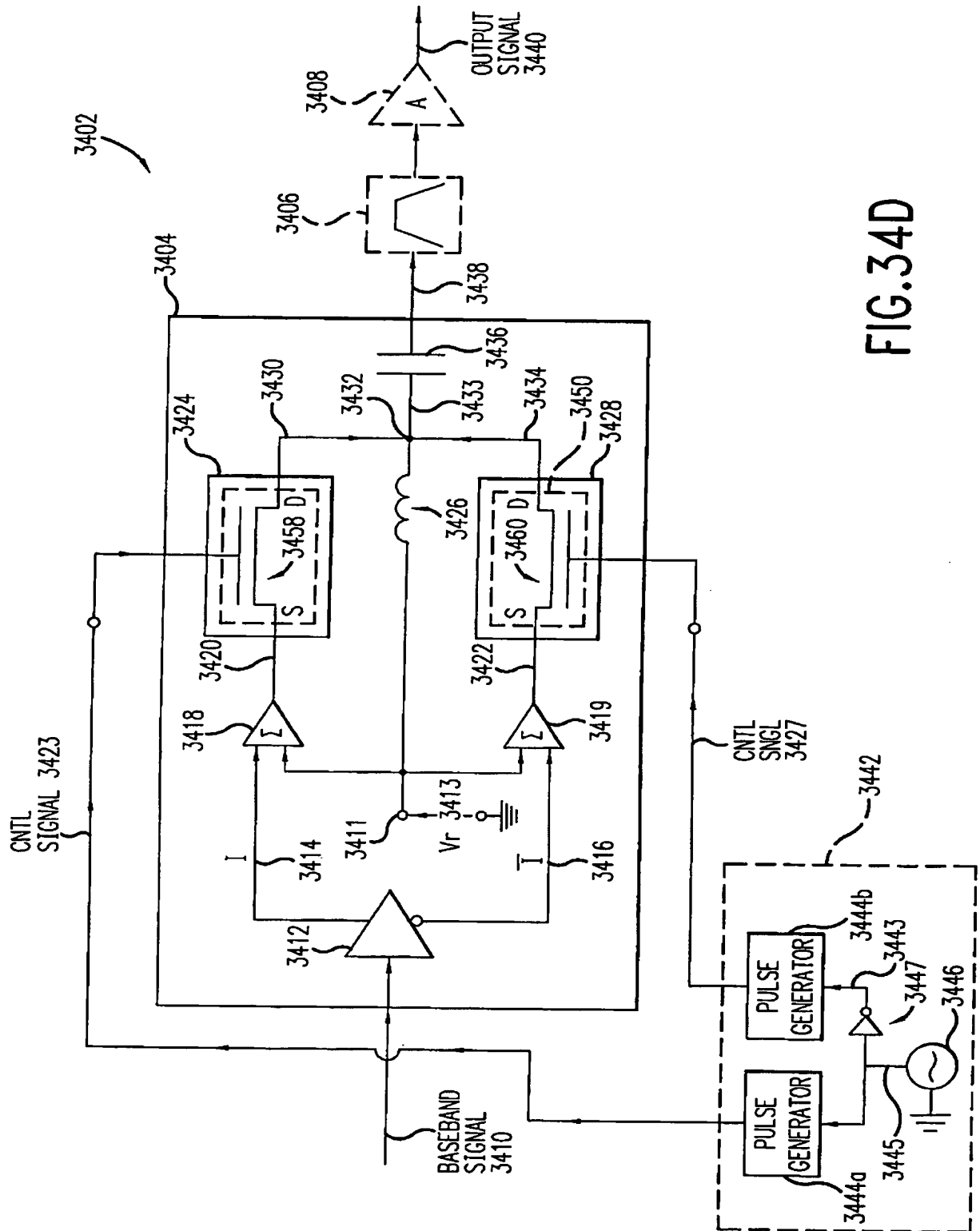


FIG. 34D

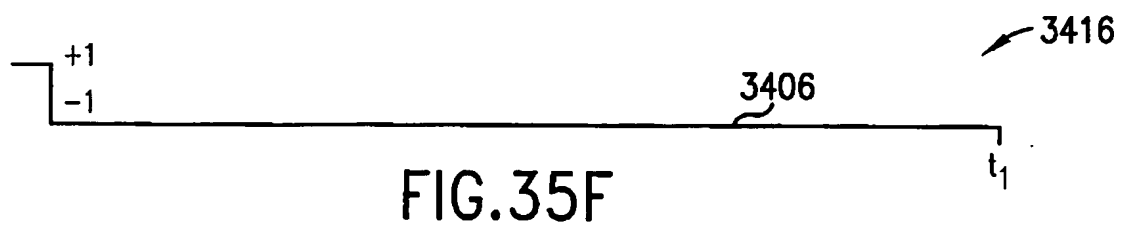
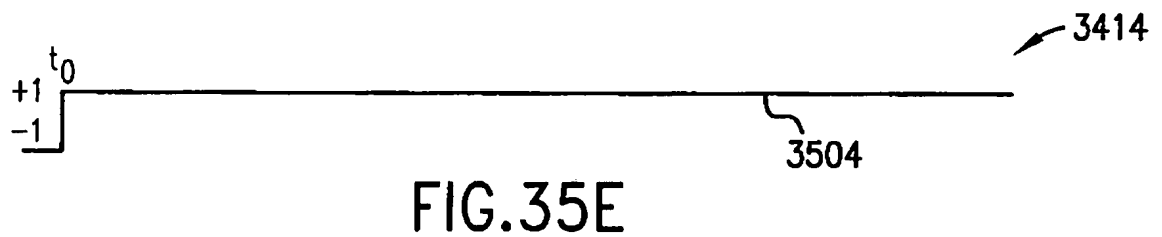
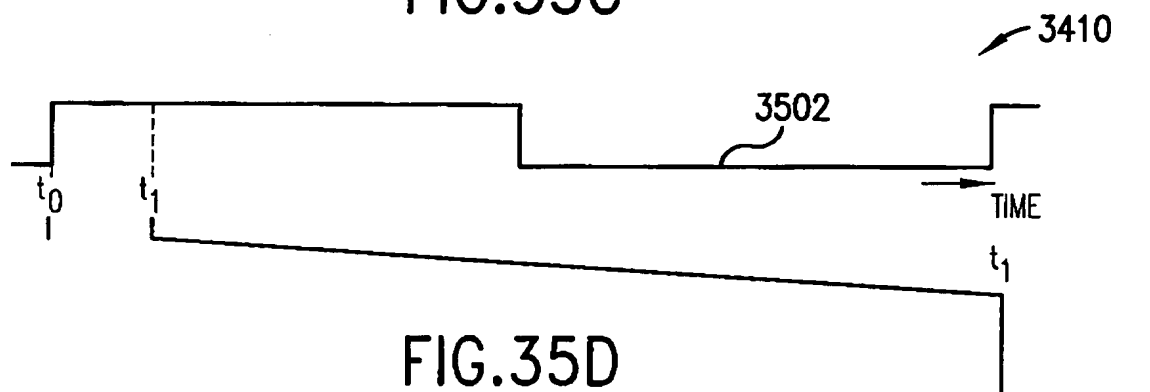
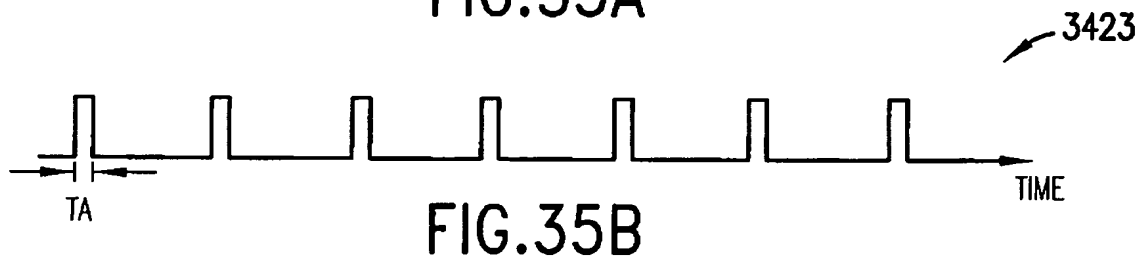
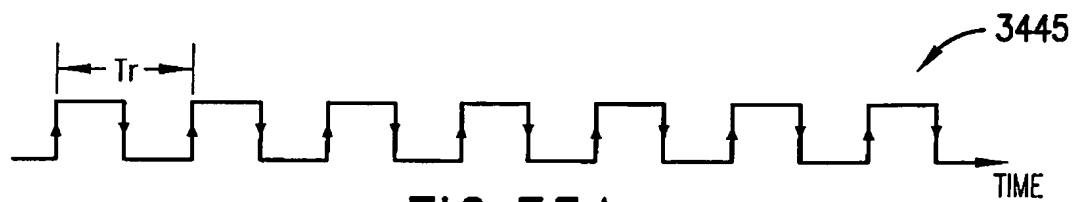




FIG. 35G

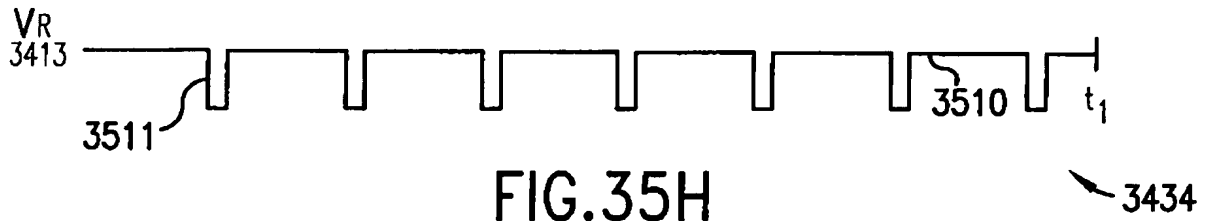


FIG. 35H

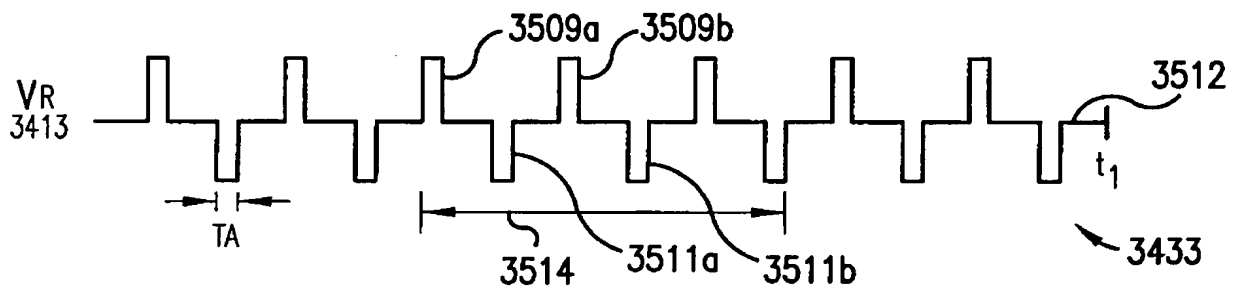


FIG. 35I

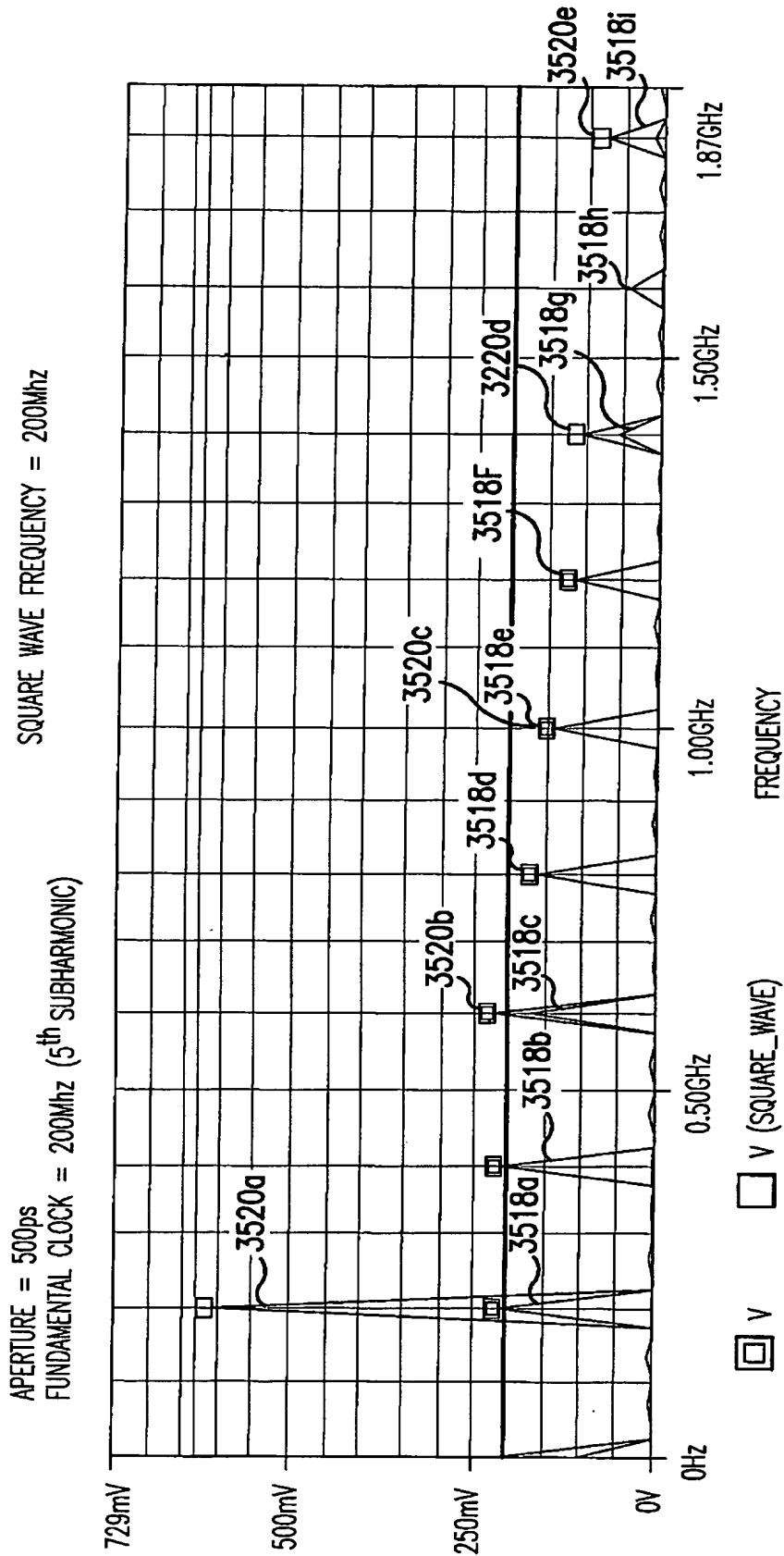
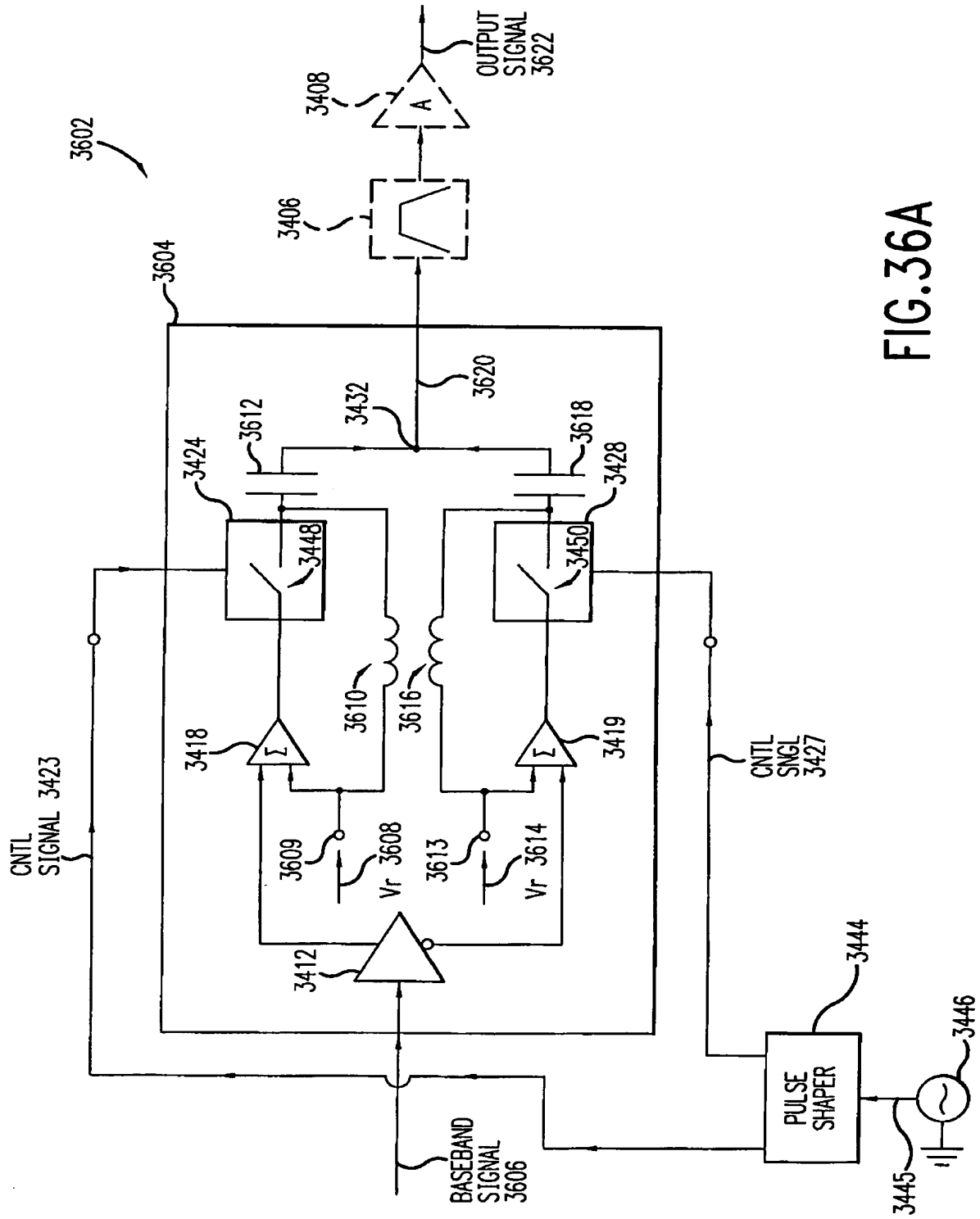


FIG.35J



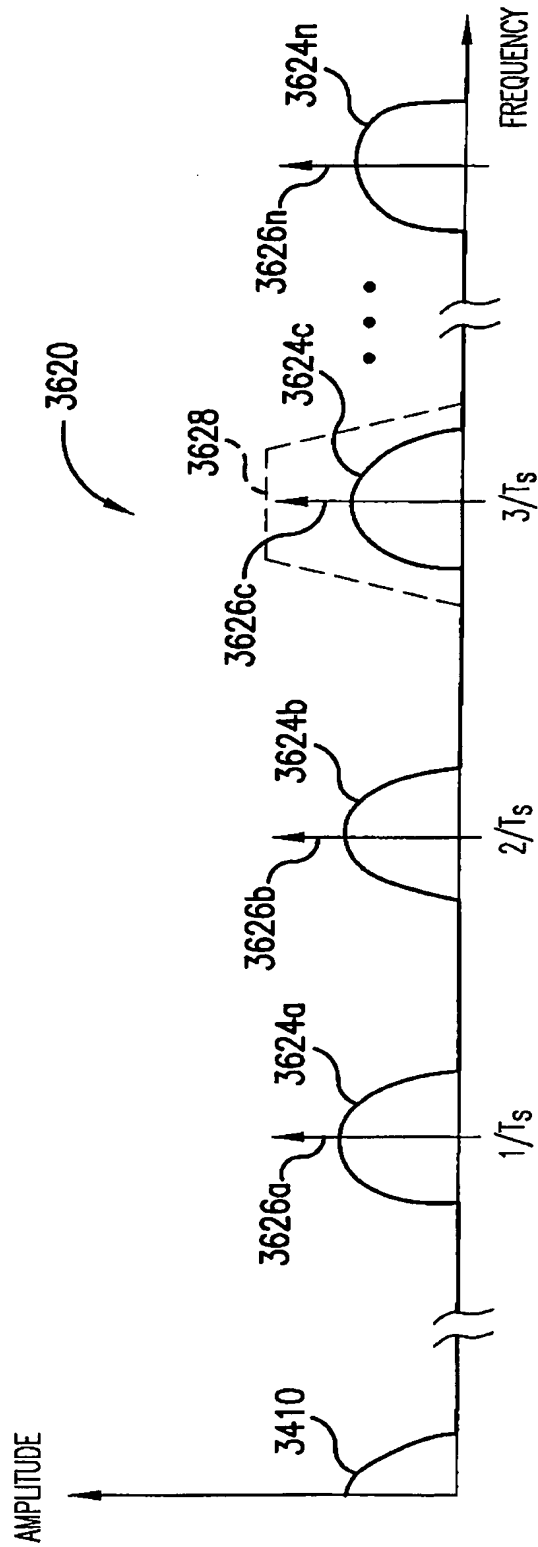


FIG. 36B

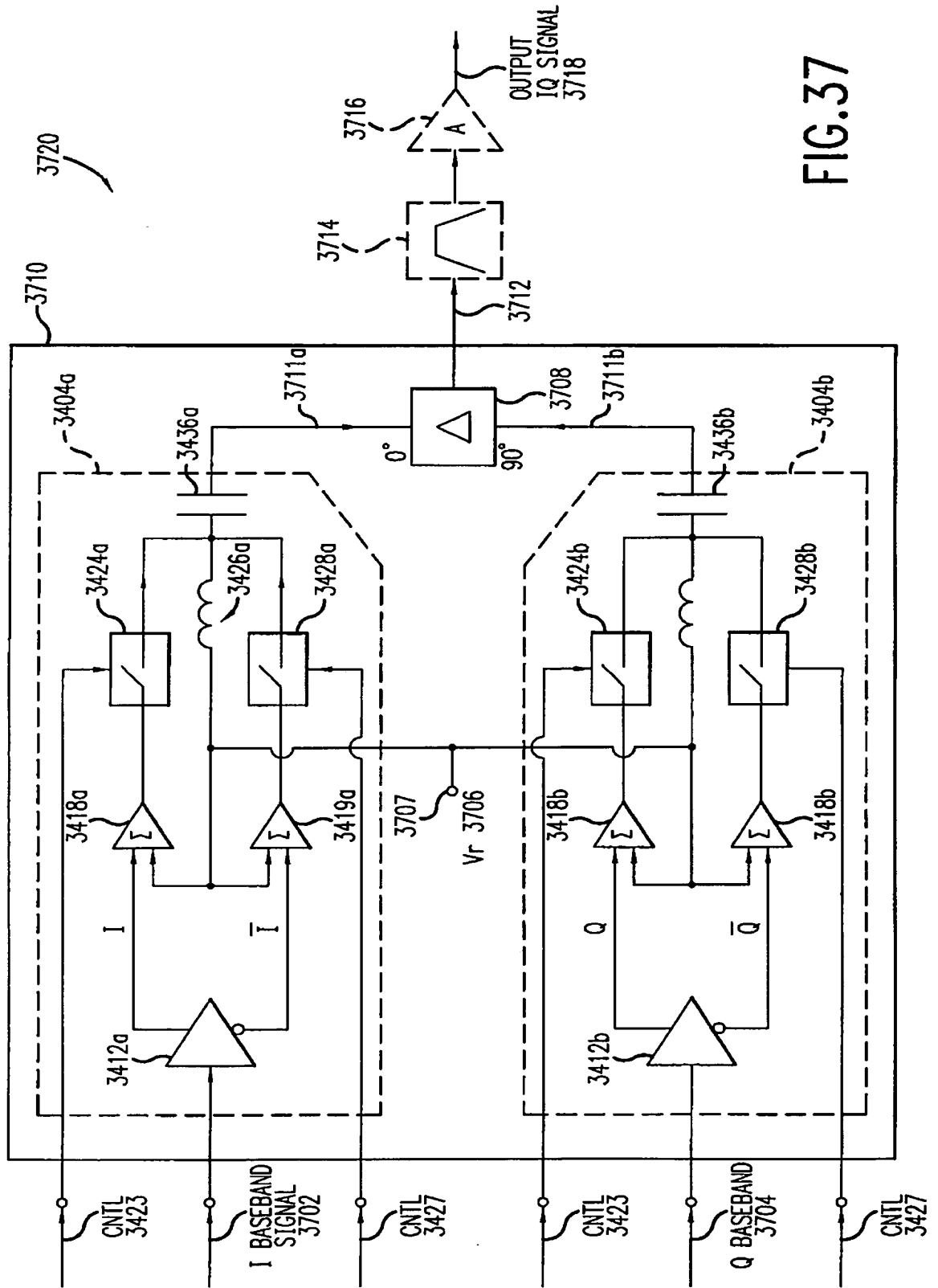


FIG. 37

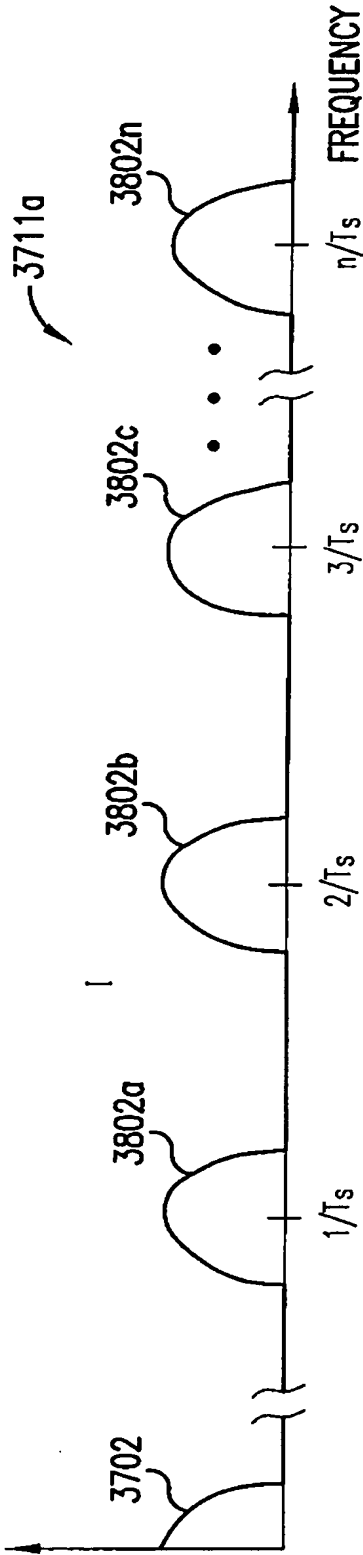


FIG. 38A

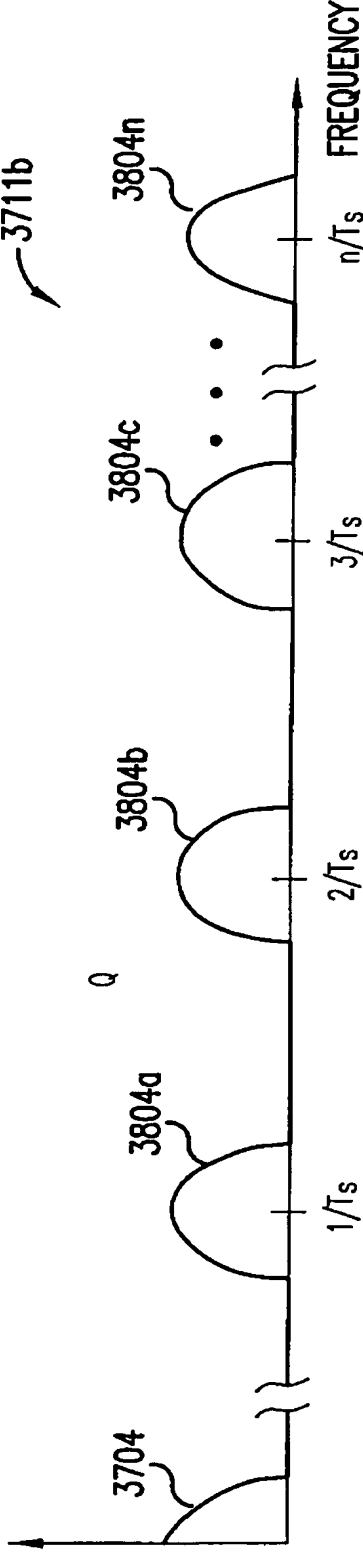


FIG. 38B

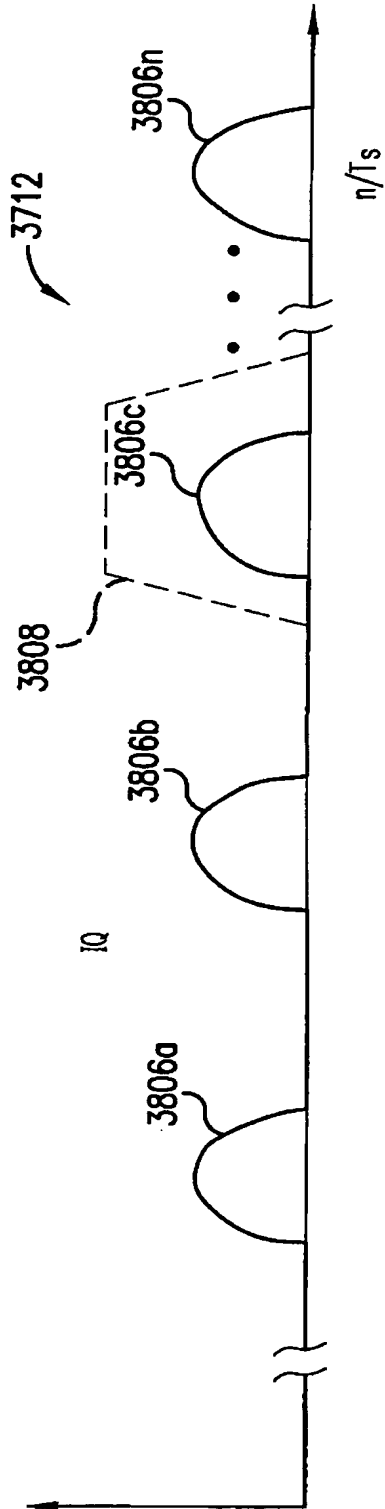


FIG. 38C

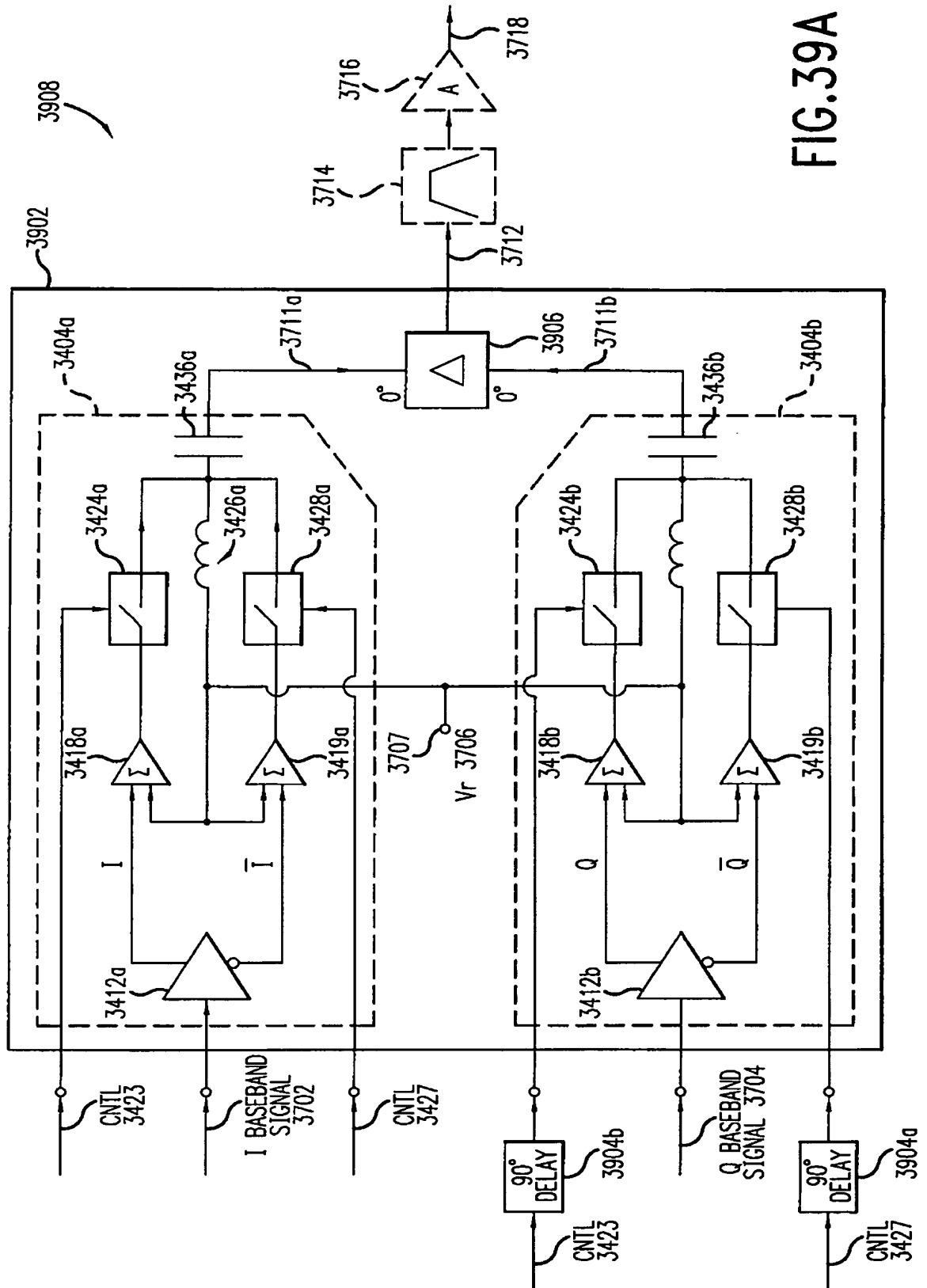


FIG. 39A

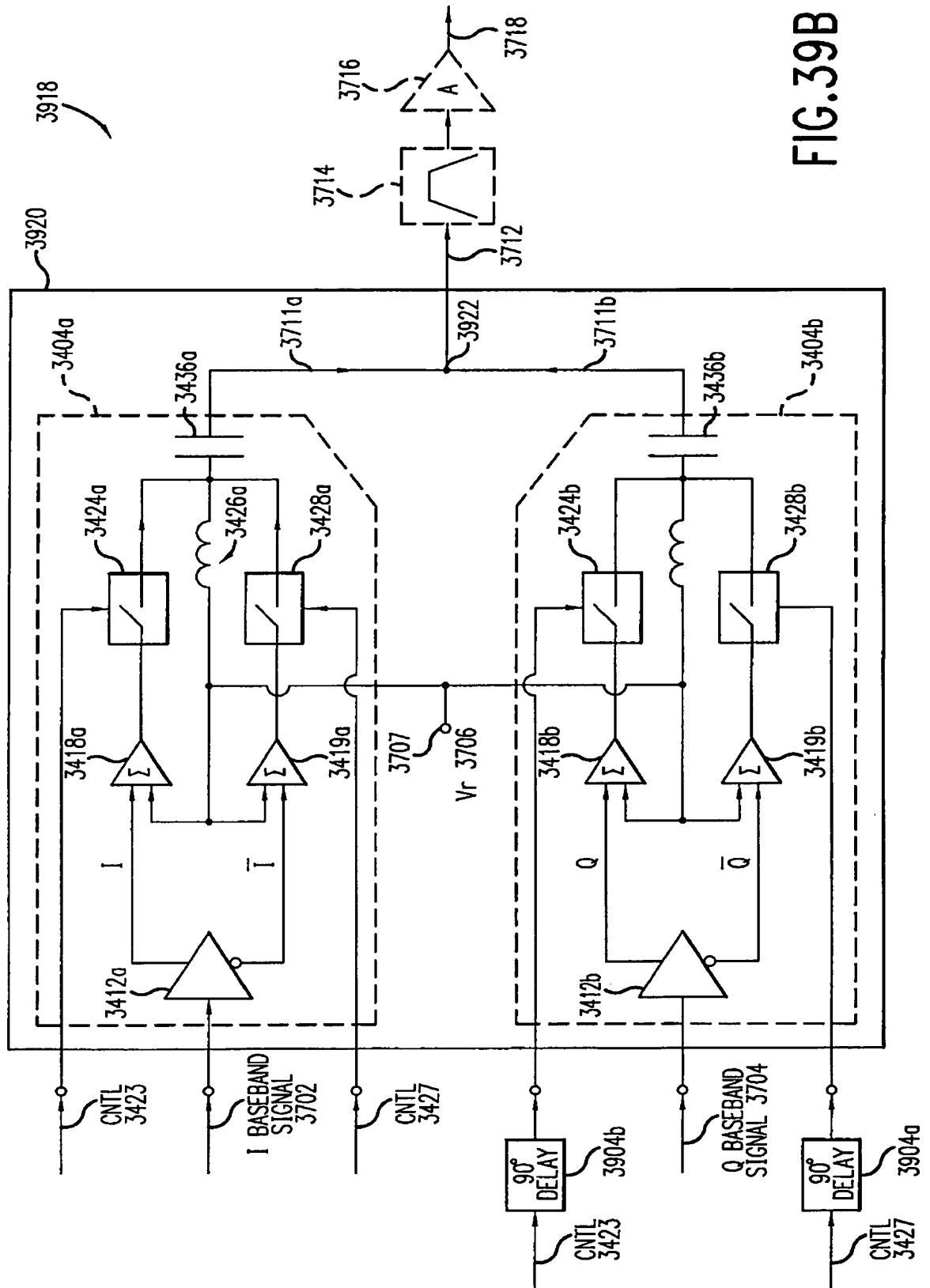


FIG. 39B

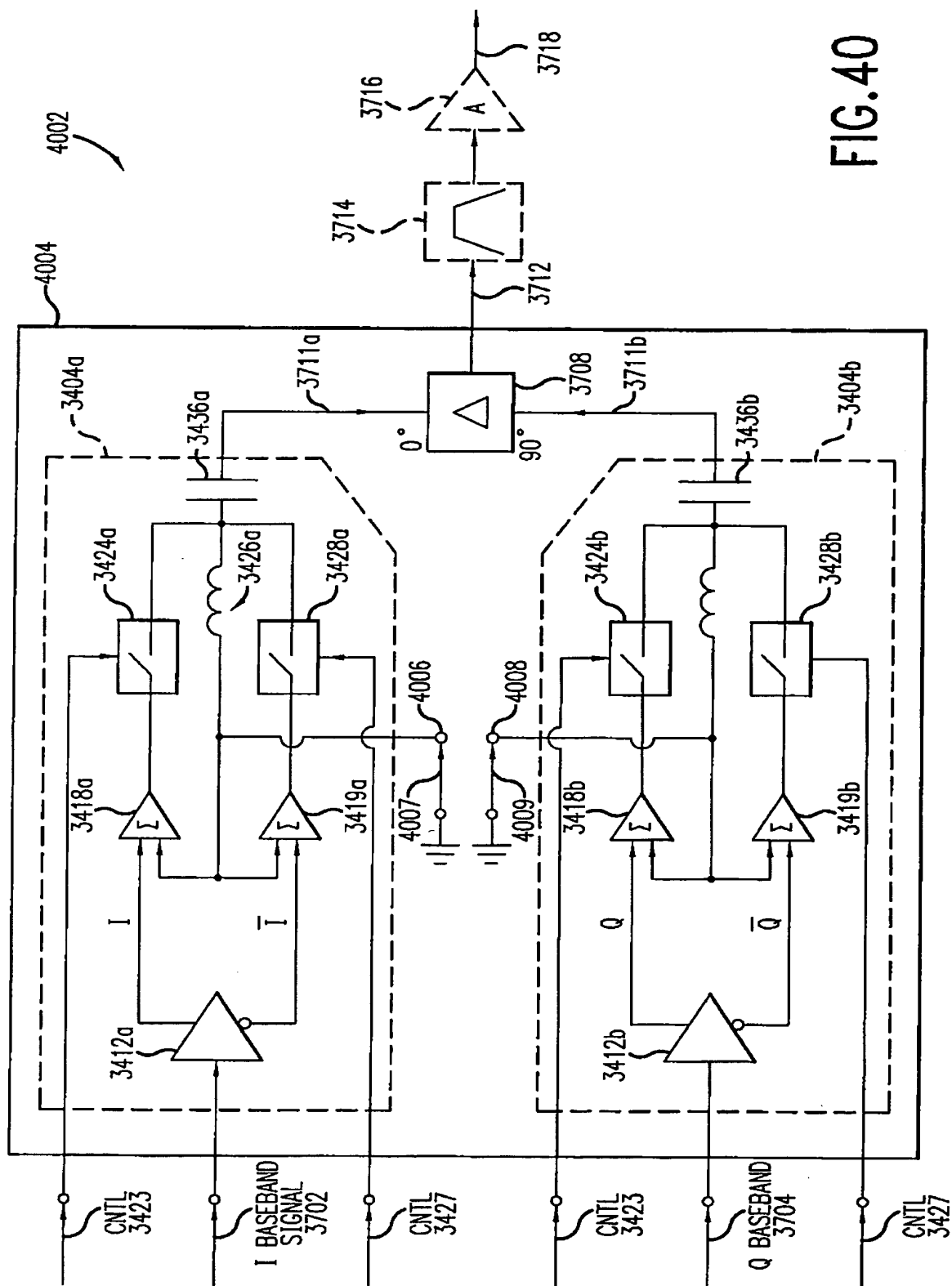


FIG. 40

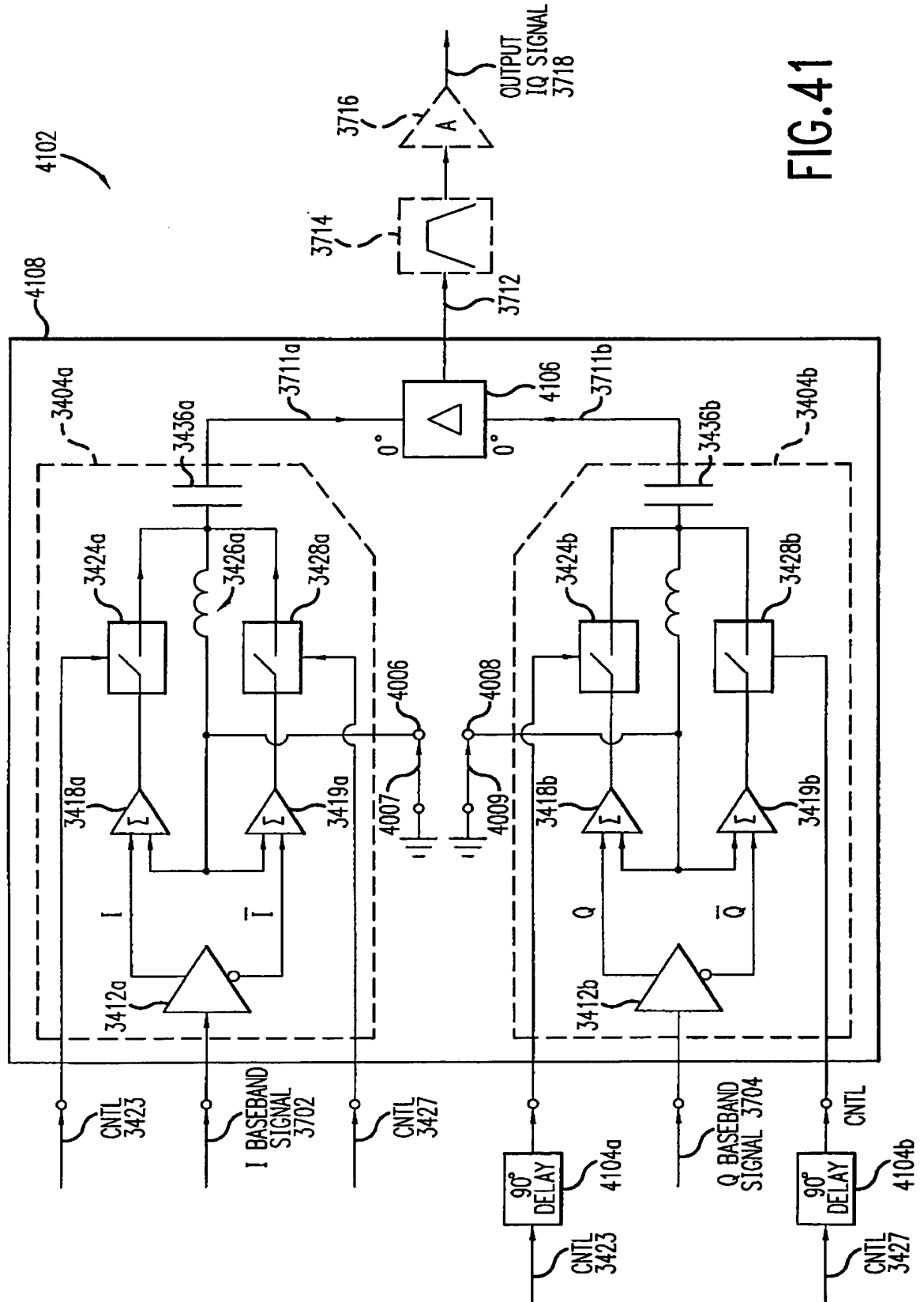
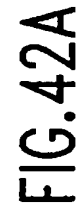


FIG. 41



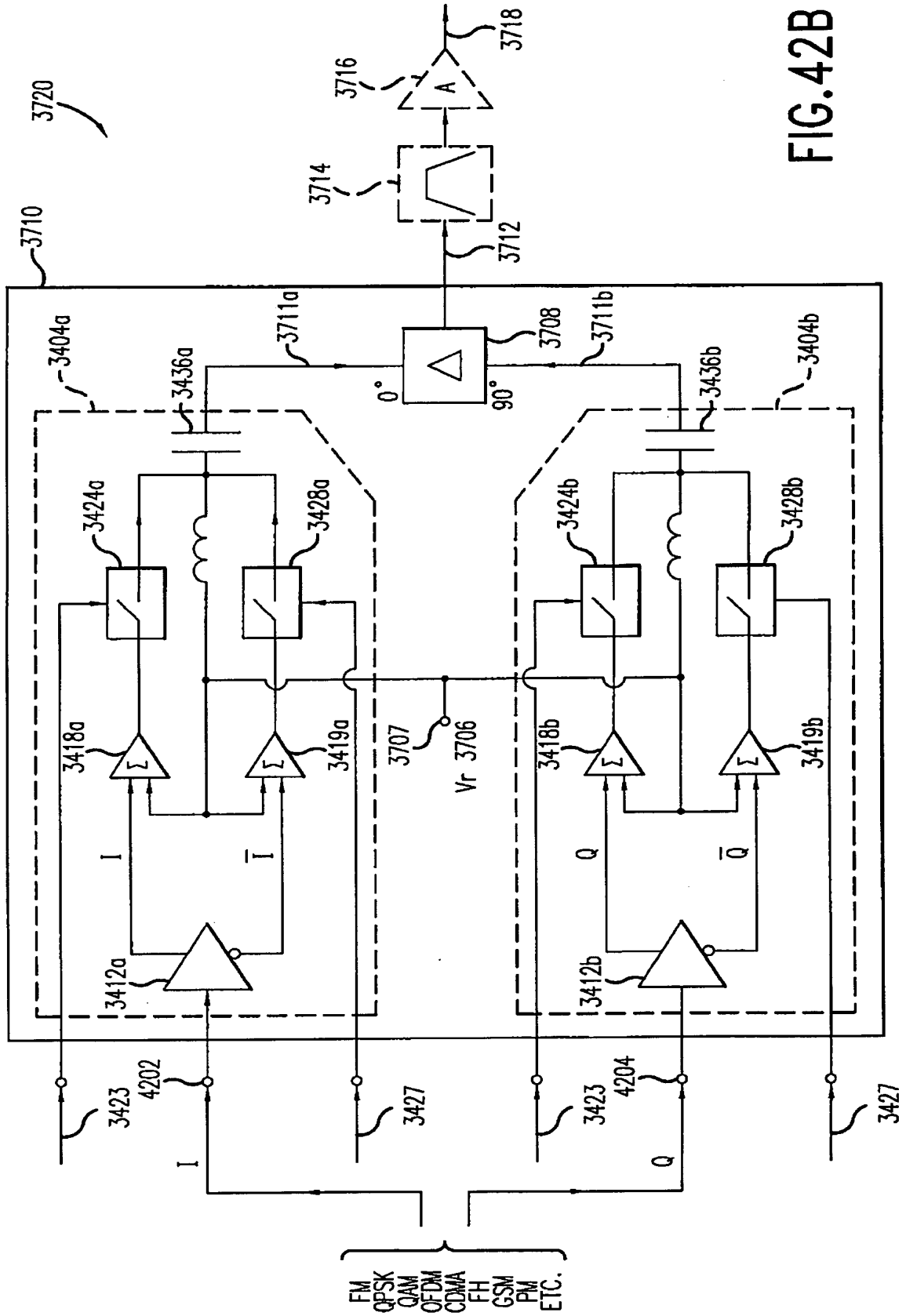


FIG. 42B

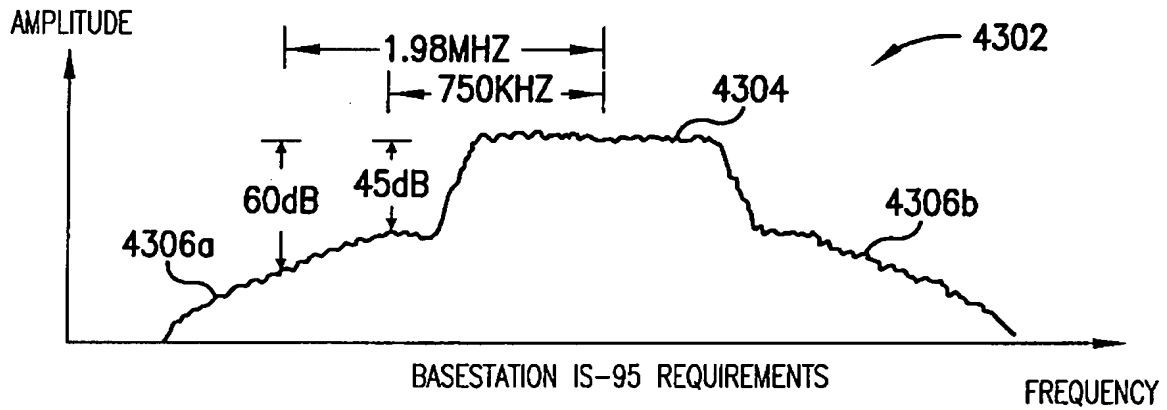


FIG. 43A

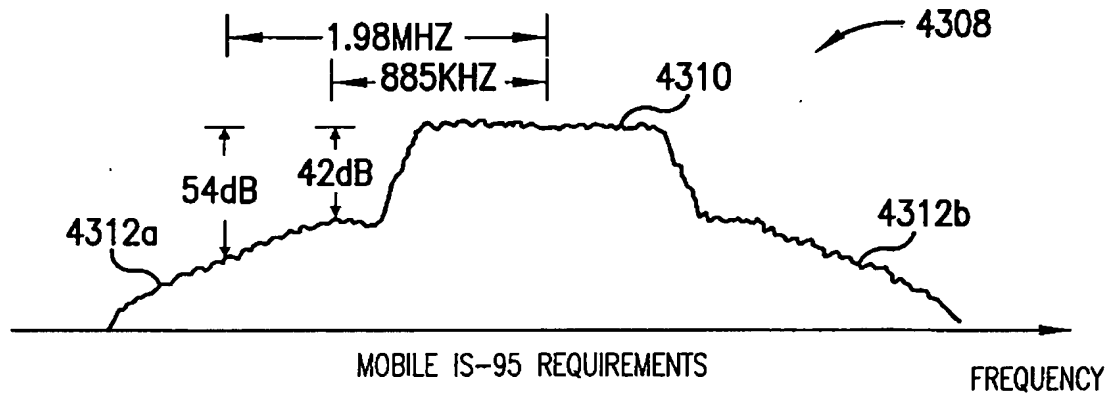
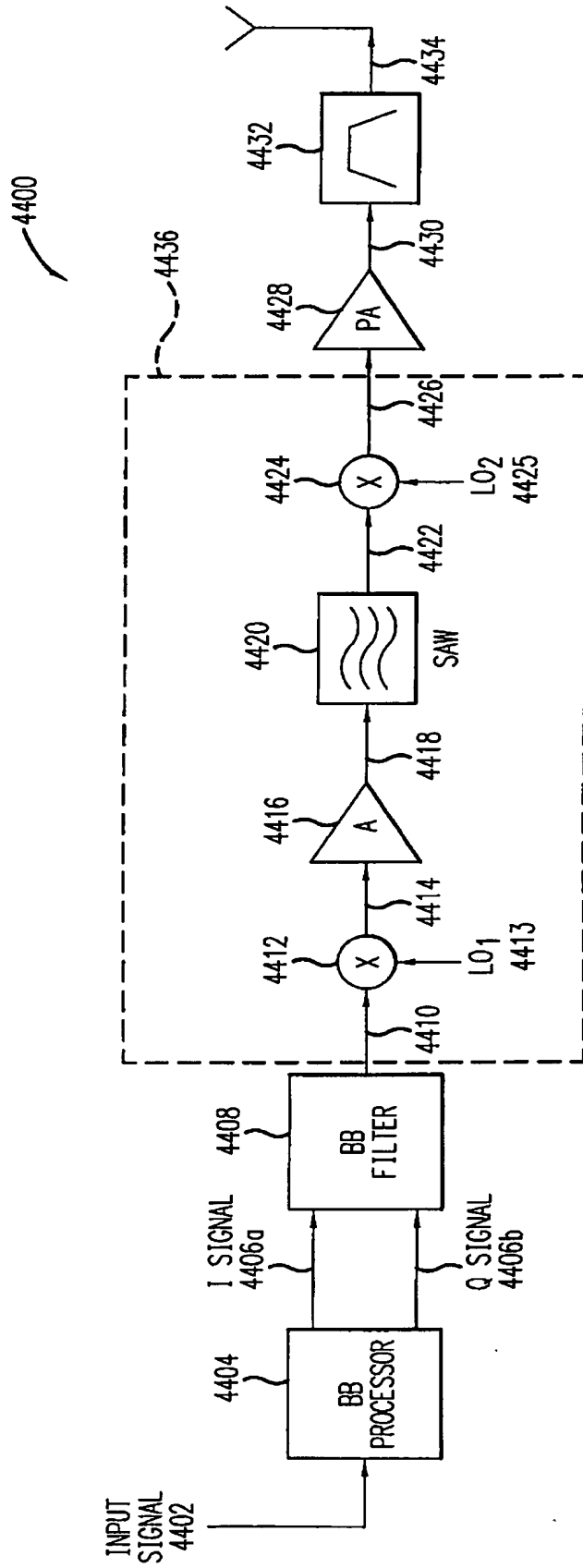


FIG. 43B



CONVENTIONAL TRANSMITTER

FIG. 44

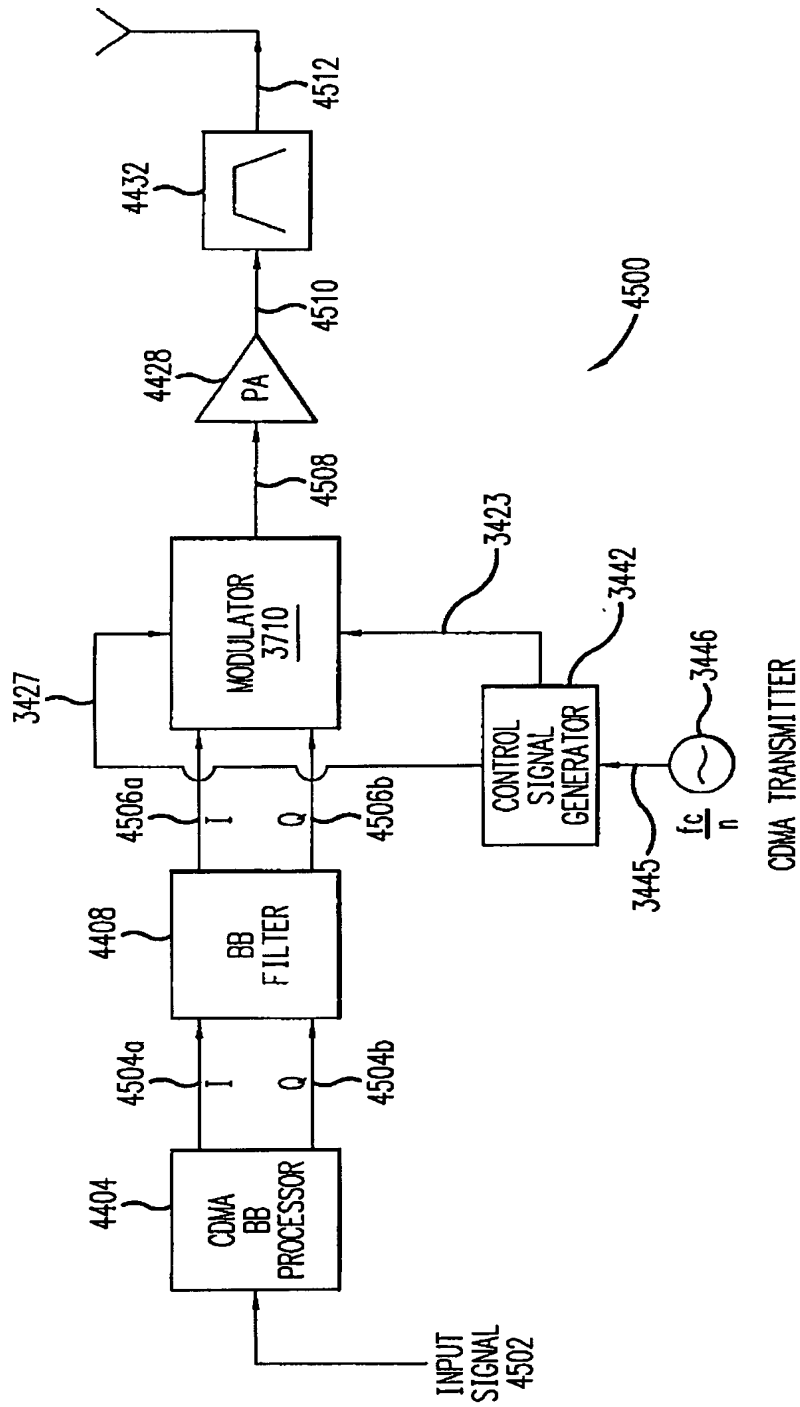


FIG. 45A

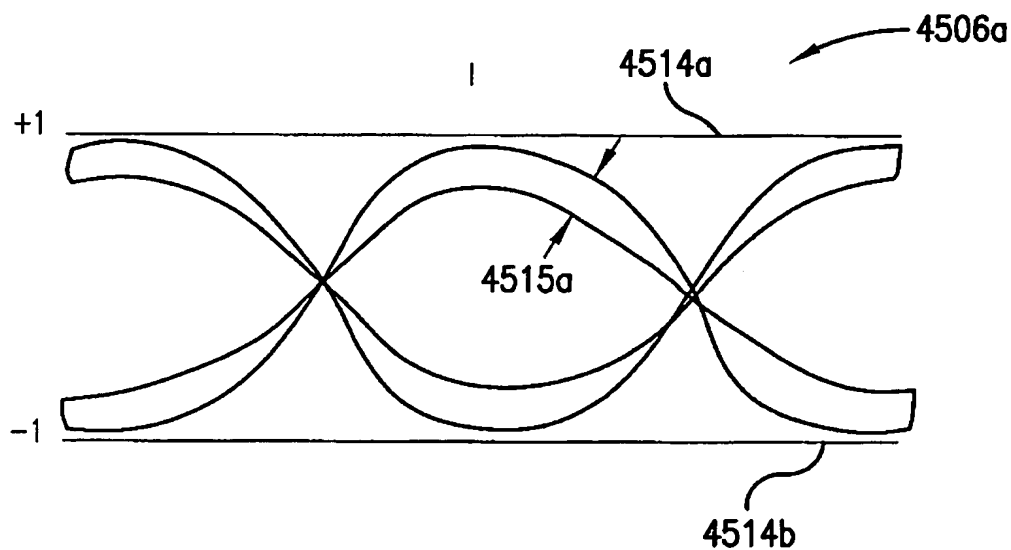


FIG. 45B

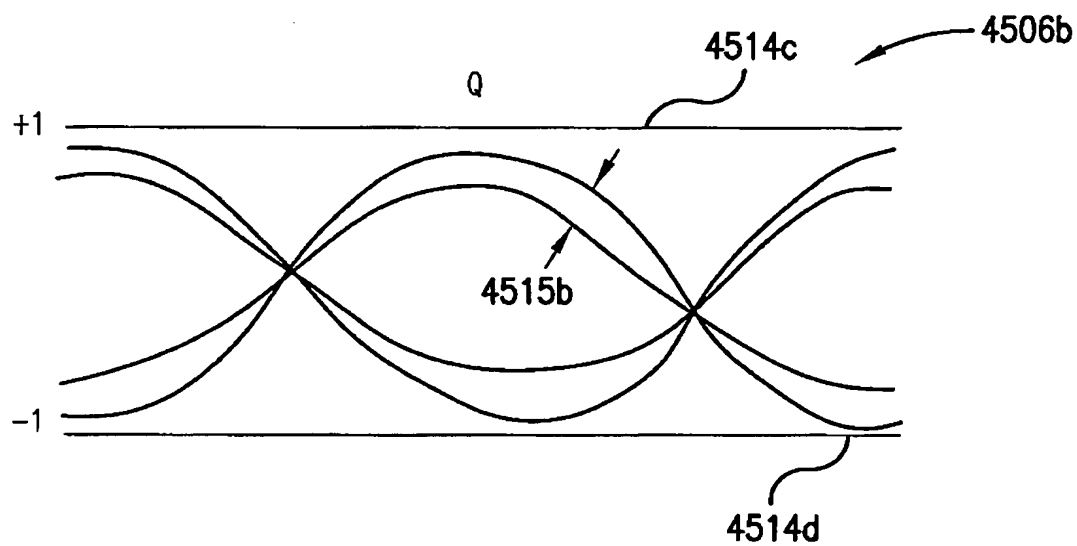


FIG. 45C

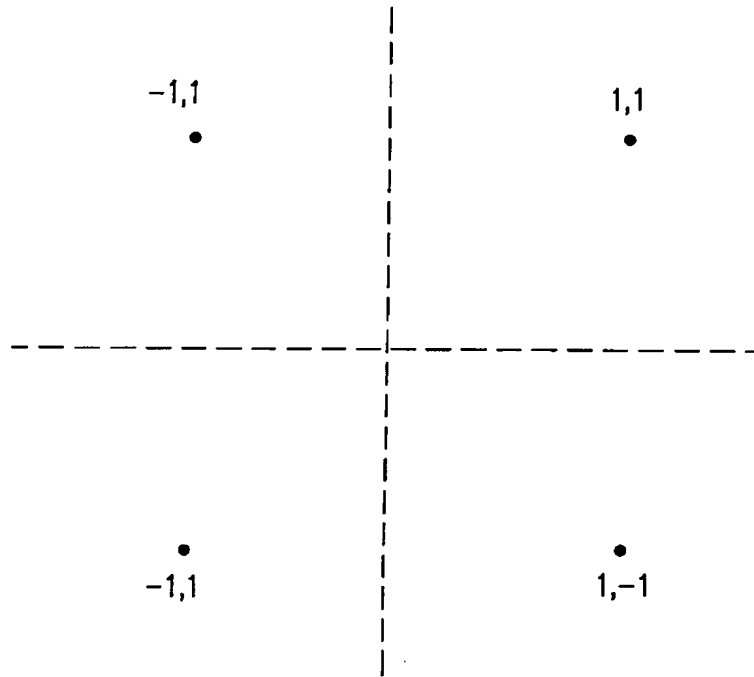


FIG.45D

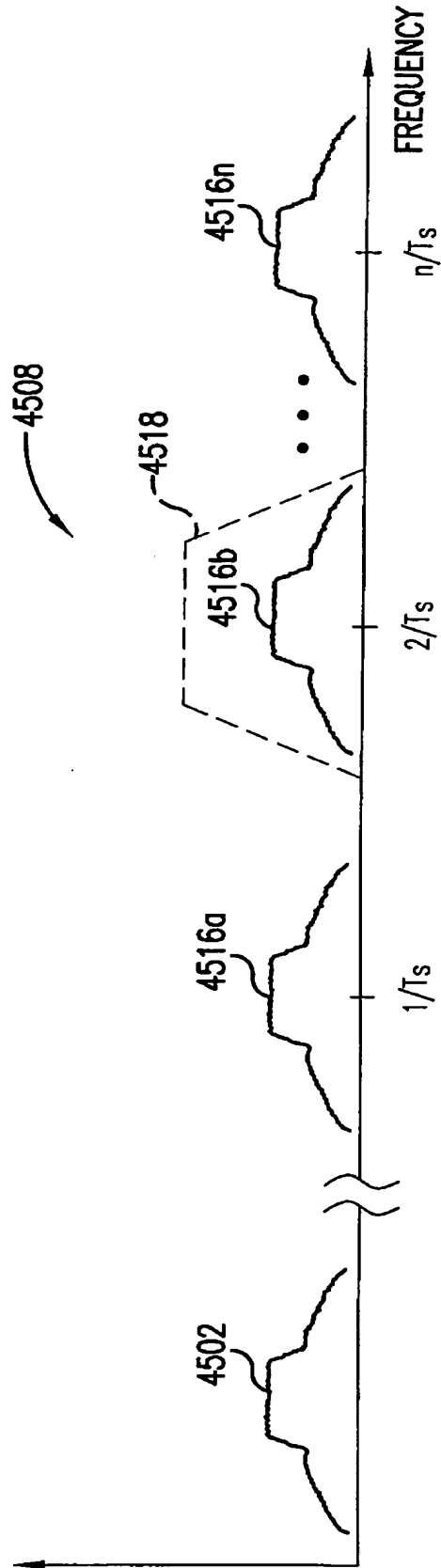


FIG. 45E

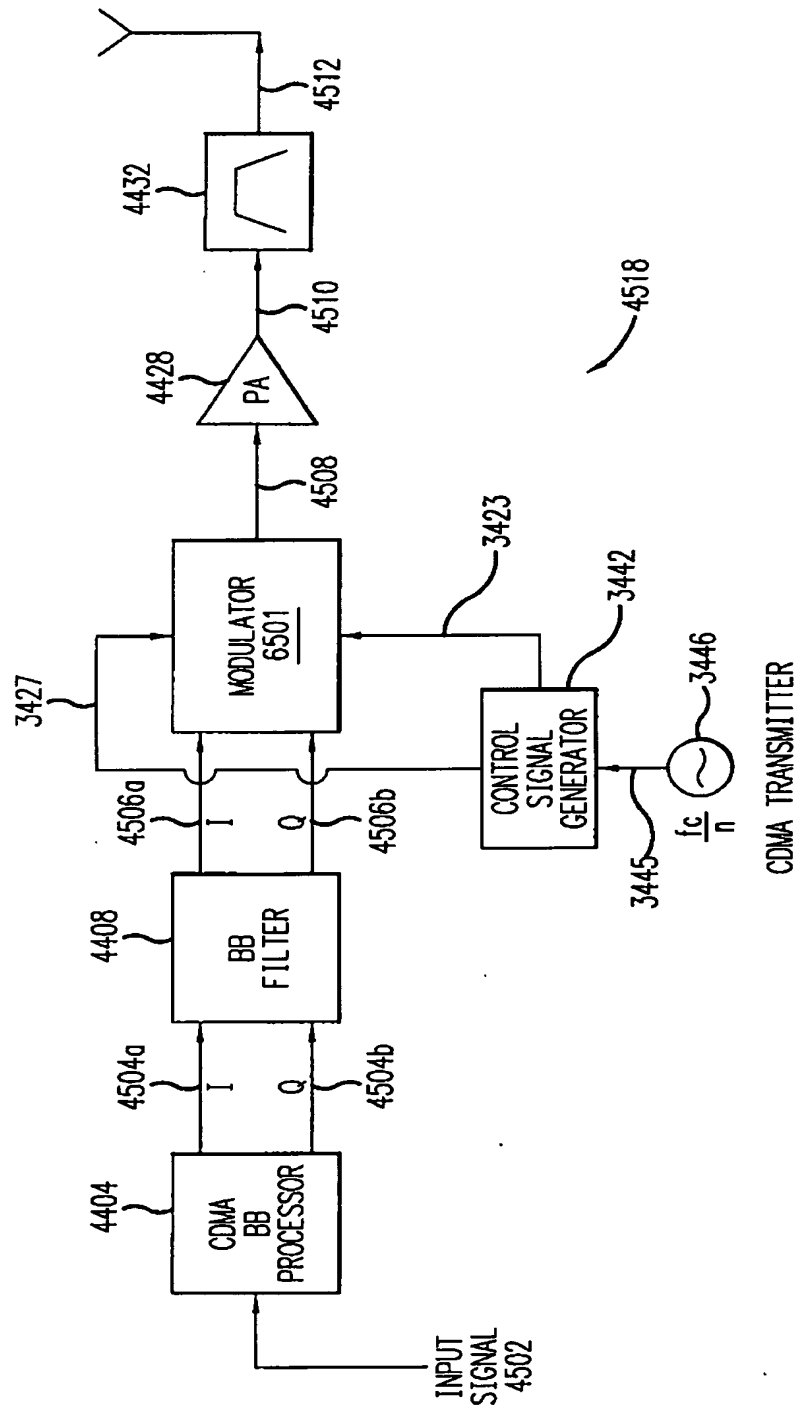
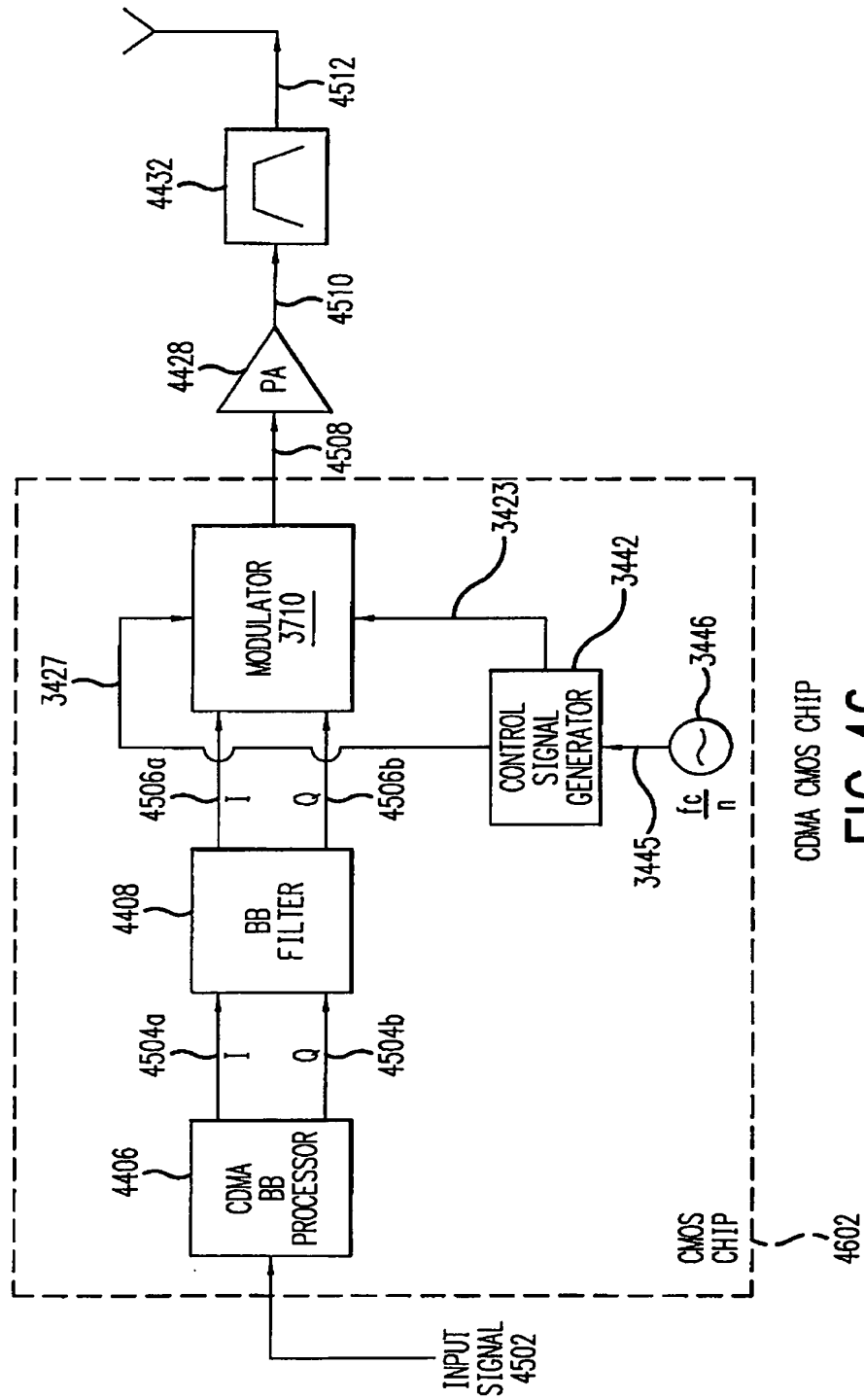


FIG. 45F



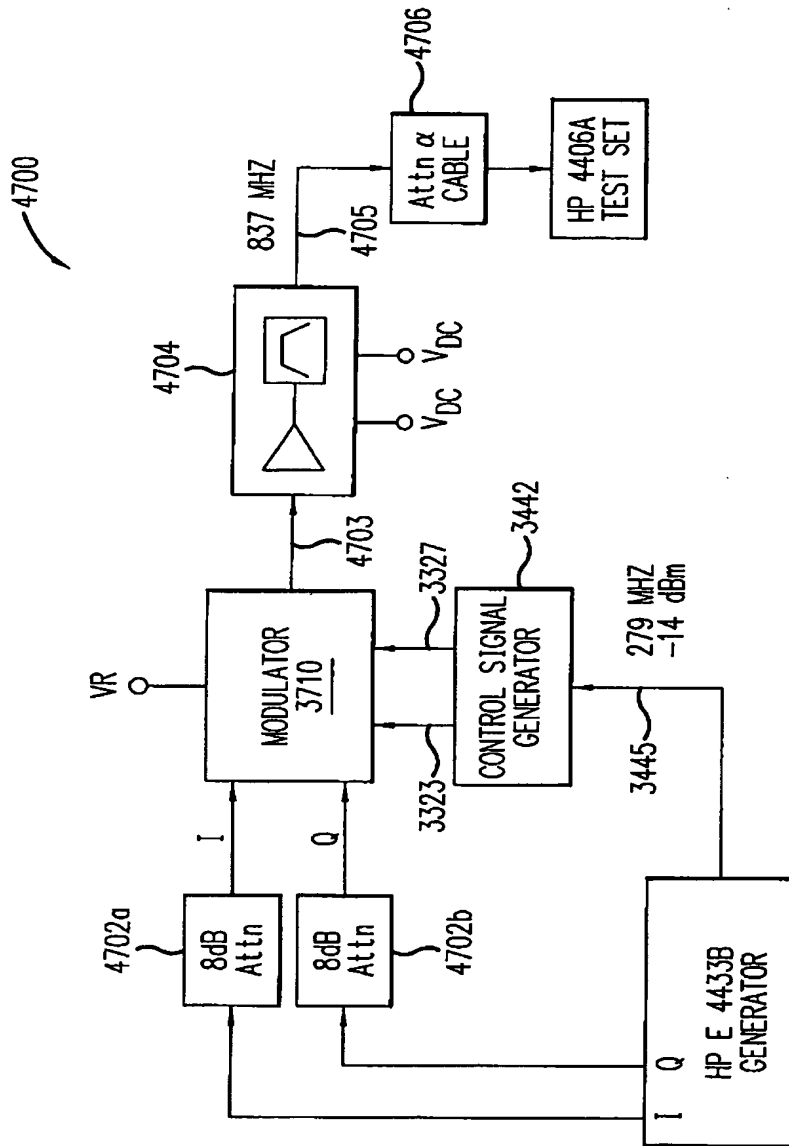


FIG.47

4802

BASE STATION

RHO	0.9970
EVM	5.51%
PHASE ERROR	1.80°
MAGNITUDE ERROR	4.53%
CARRIER INSERTION	-37.91 dB
PA POWER OUT	28.06 dBm

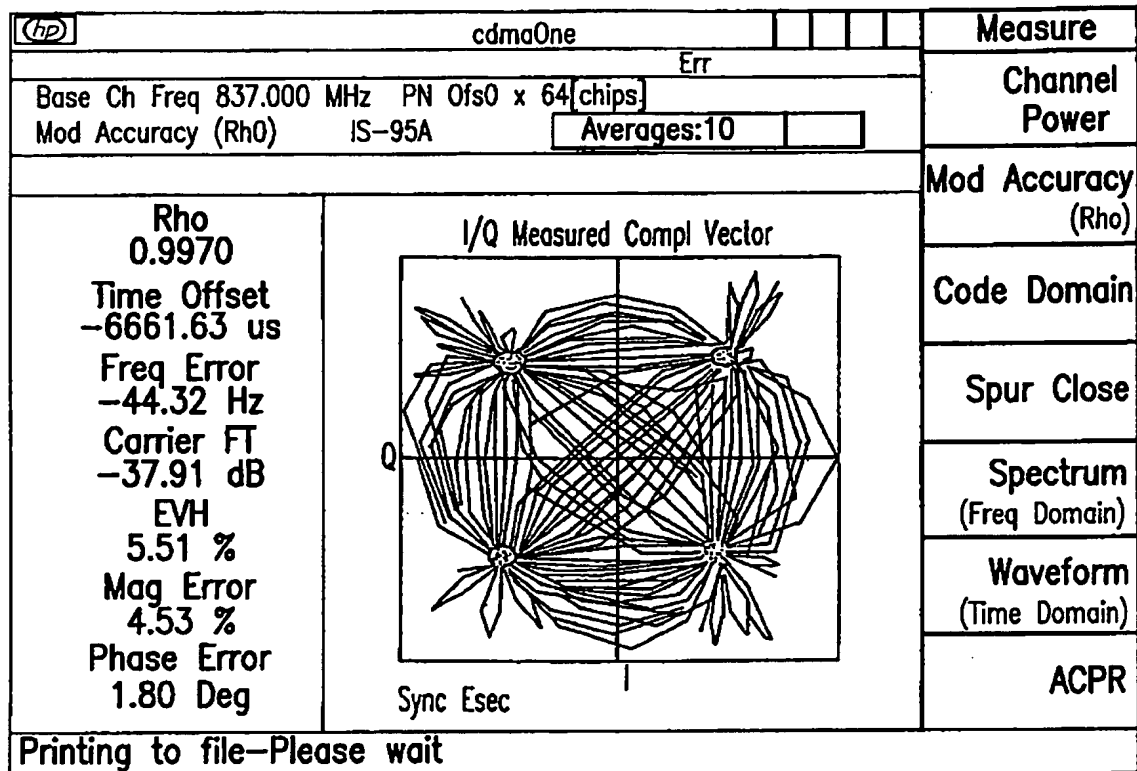
FIG.48

FREQUENCY (MHz) (MOBILE STATION)

4902

	LOW	MIDDLE	HIGH
RHO	0.9892	0.9969	0.9892
EVM	10.39%	5.54%	10.39%
PHASE ERROR	4.47°	2.24°	4.08°
MAGNITUDE ERROR	6.84%	4.21%	8.27%
CARRIER INSERTION	-40.15 dB	-44.58 dB	-35.27 dB
PA POWER OUT	27.36 dBm	28.11 dBm	27.55 dBm

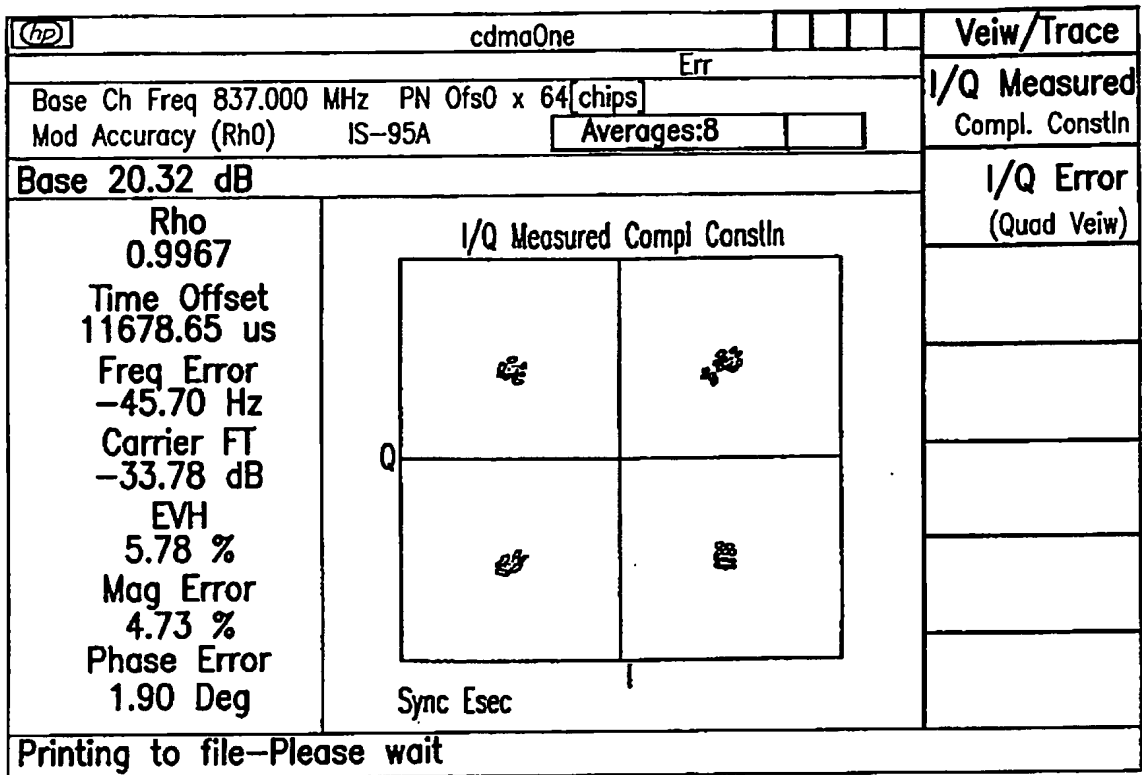
FIG.49



BASE STATION CONSTELLATION FOR PILOT CHANNEL TEST

FIG.50

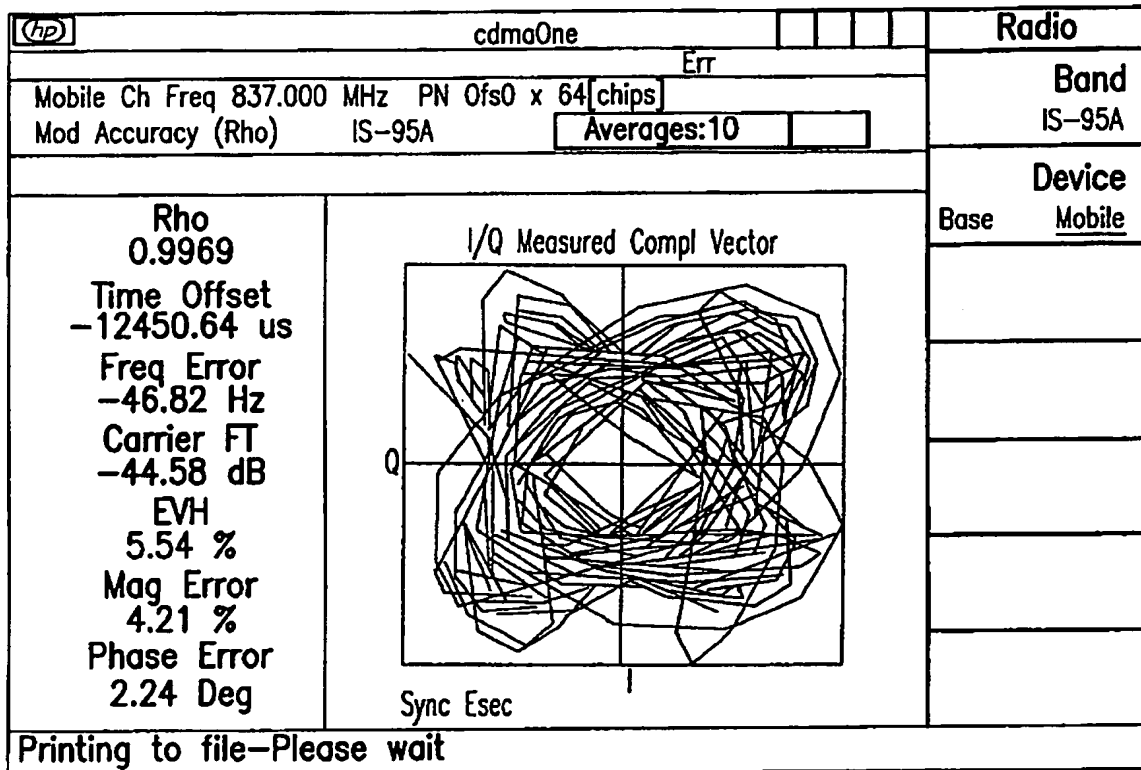
5002



BASE STATION SAMPLED CONSTELLATION

FIG.51

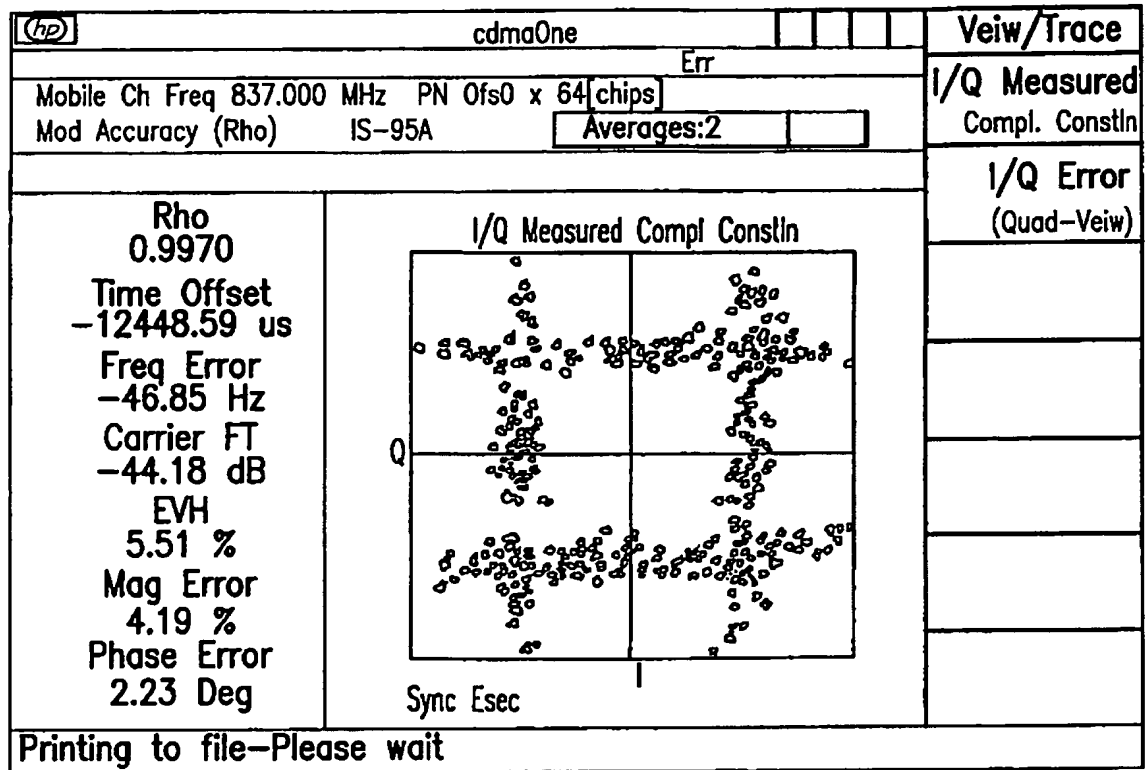
5102



MOBILE STATION CONSTELLATION FOR ACCESS CHANNEL TEST

FIG.52

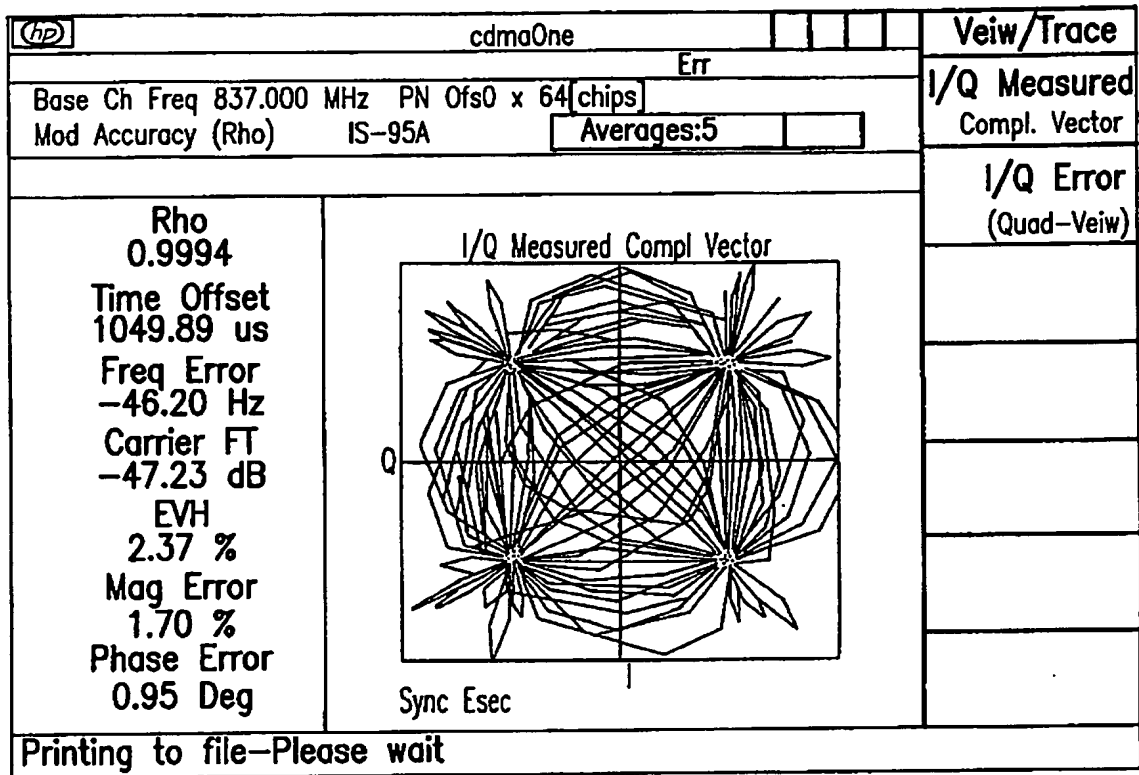
5202



MOBILE STATION SAMPLED CONSTELLATION

FIG.53

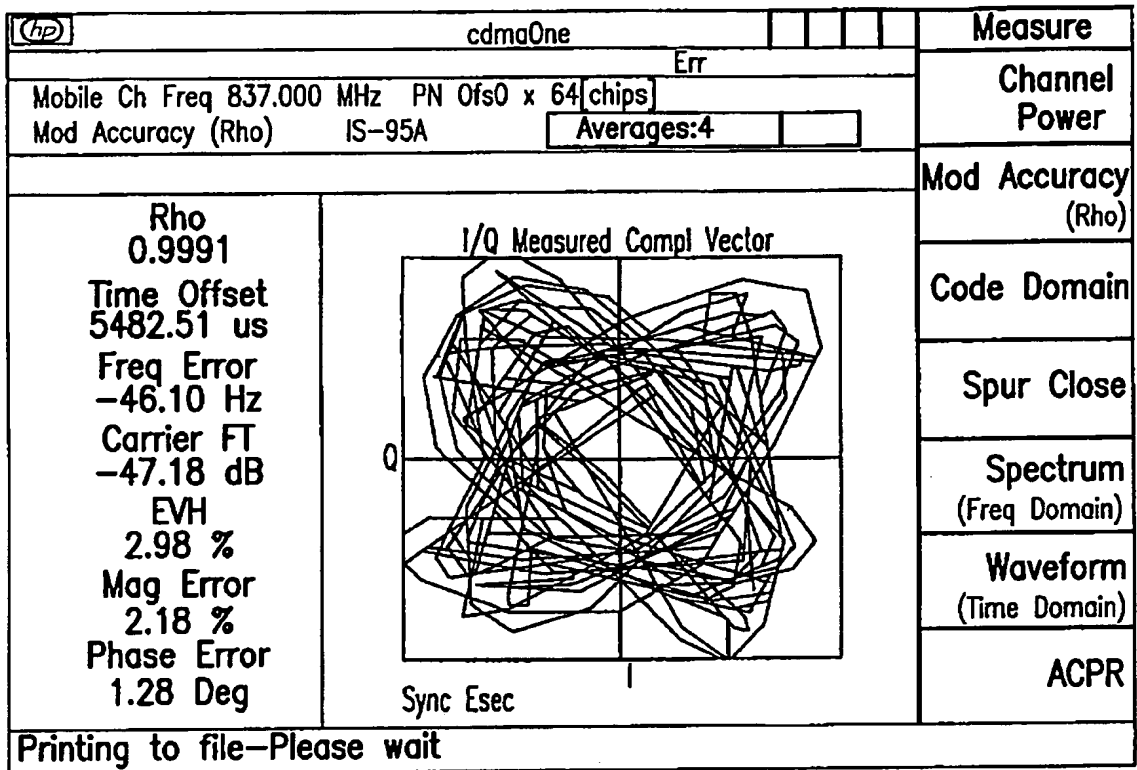
5302



BASE STATION CONSTELLATION USING  
 ONLY H/P TEST EQUIPMENT

FIG.54

5402



MOBILE CONSTELLATION USING ONLY H/P TEST EQUIPMENT

FIG.55

5502

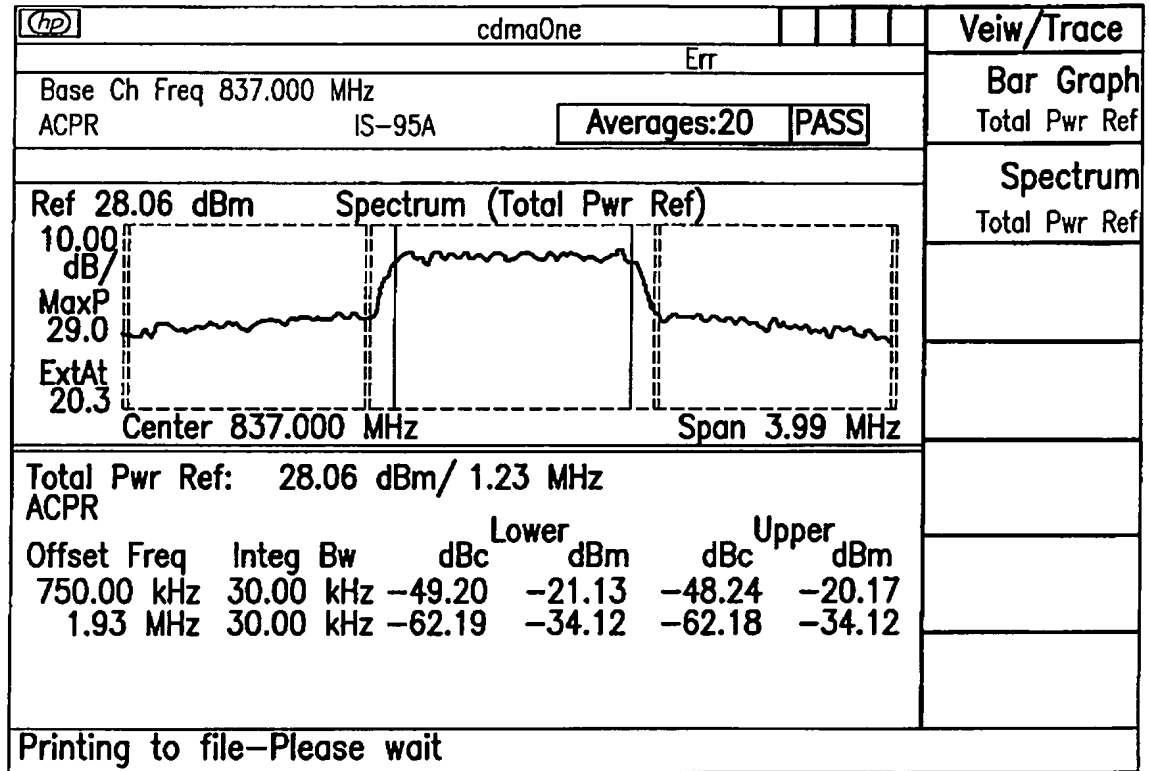
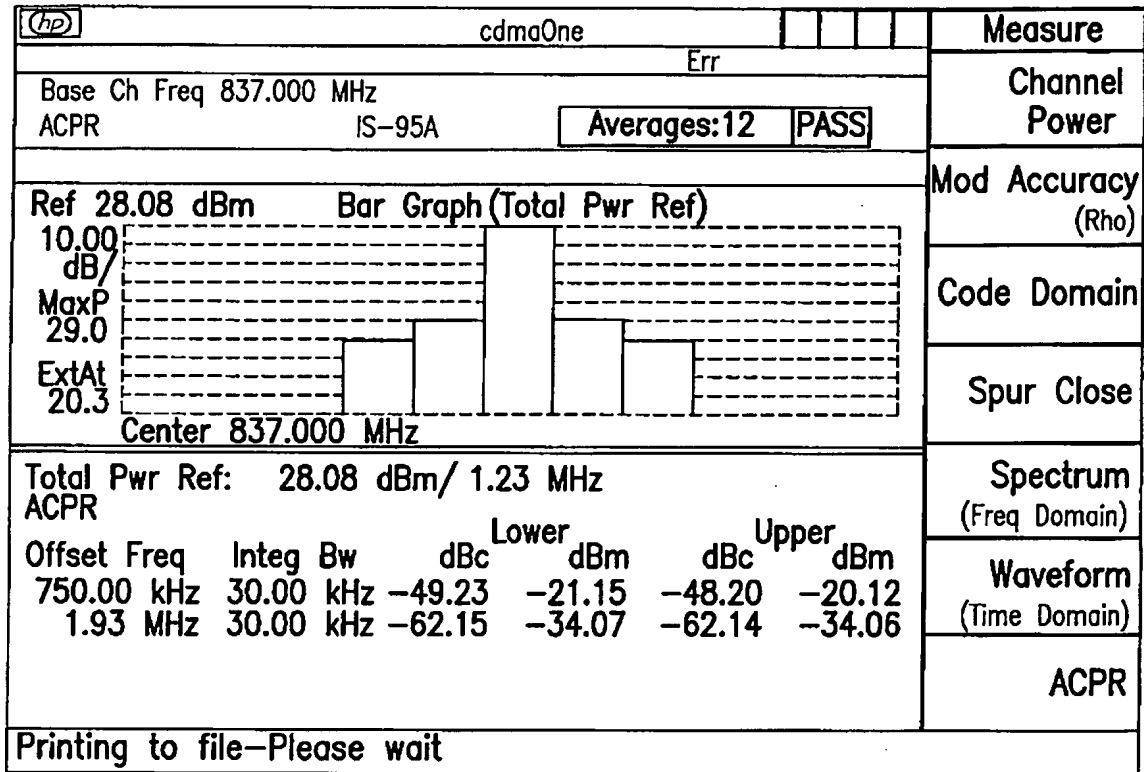


FIG.56

5602



BASE STATION SPECTRAL RESPONSE WITH MASK

FIG.57

5702

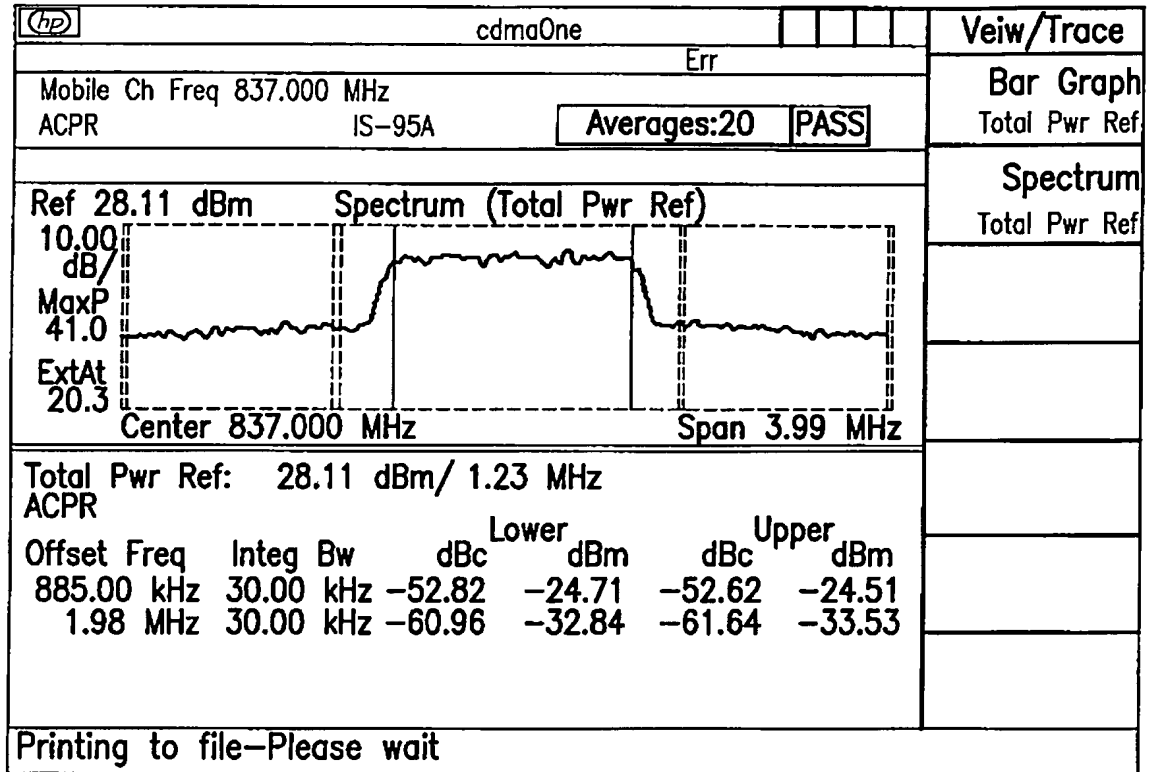
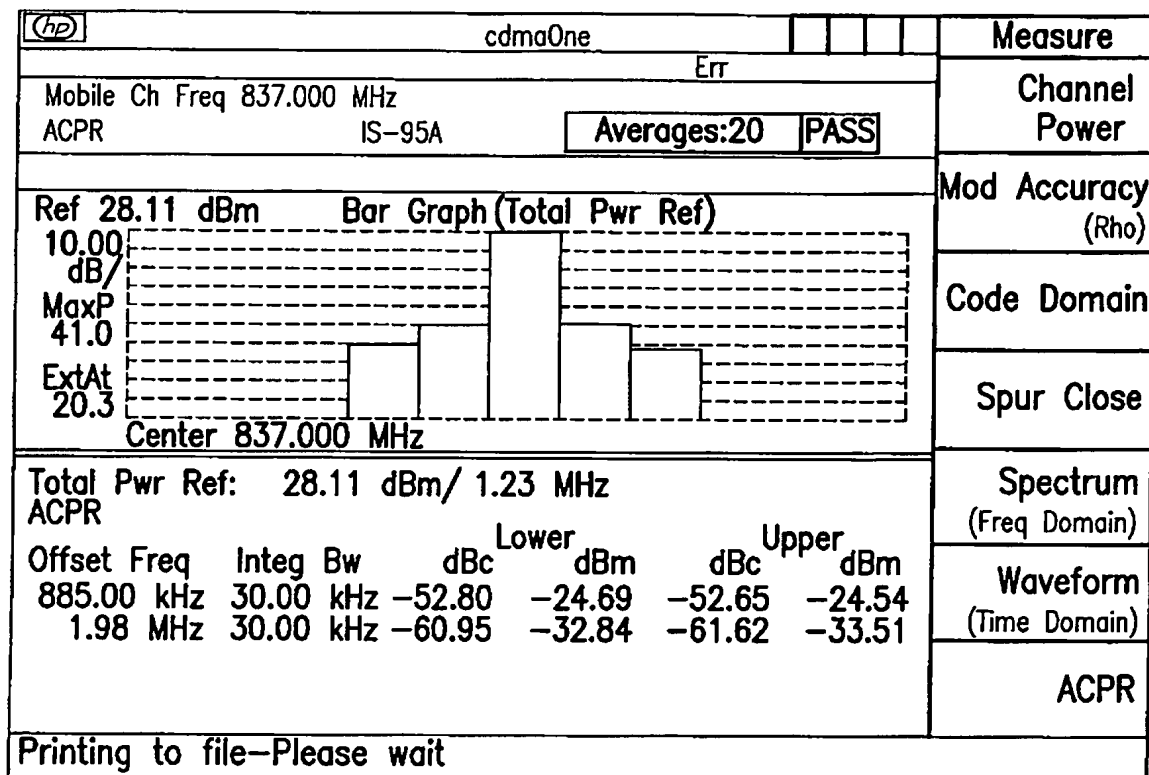


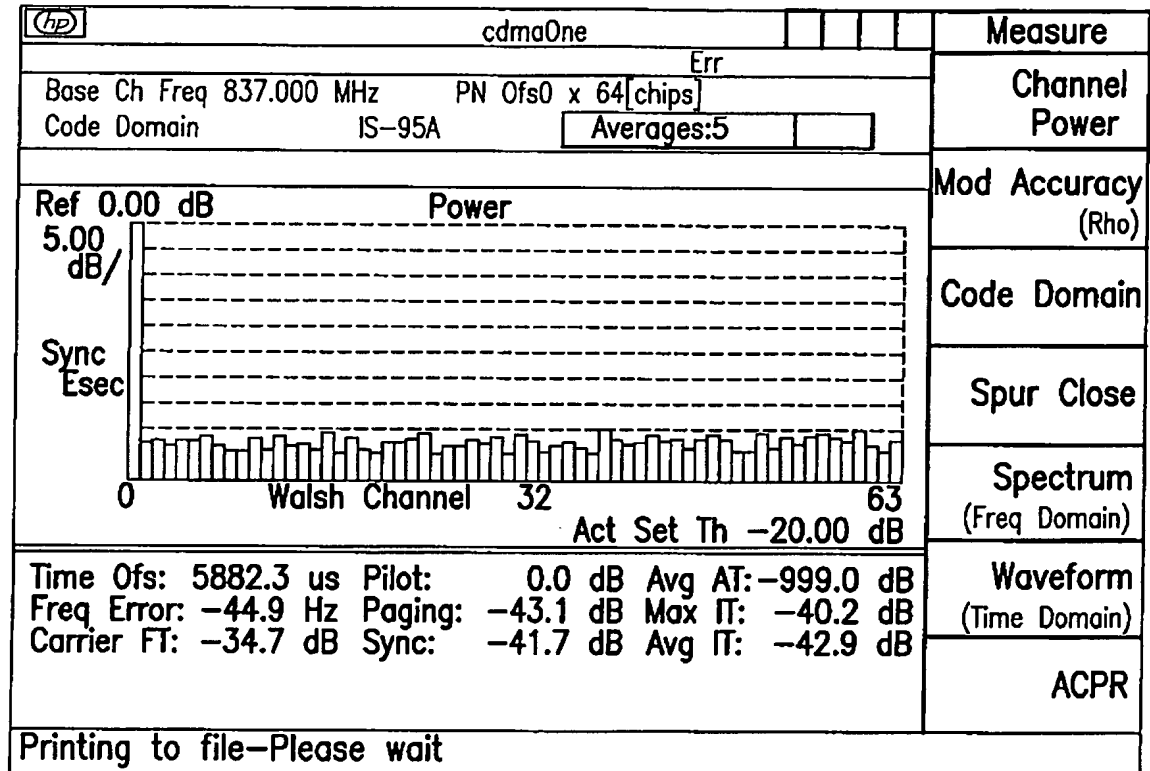
FIG.58

5802



MOBILE STATION SPECTRAL RESPONSE WITH MASK

FIG.59



CDMA CROSSTALK

FIG.60A

6002

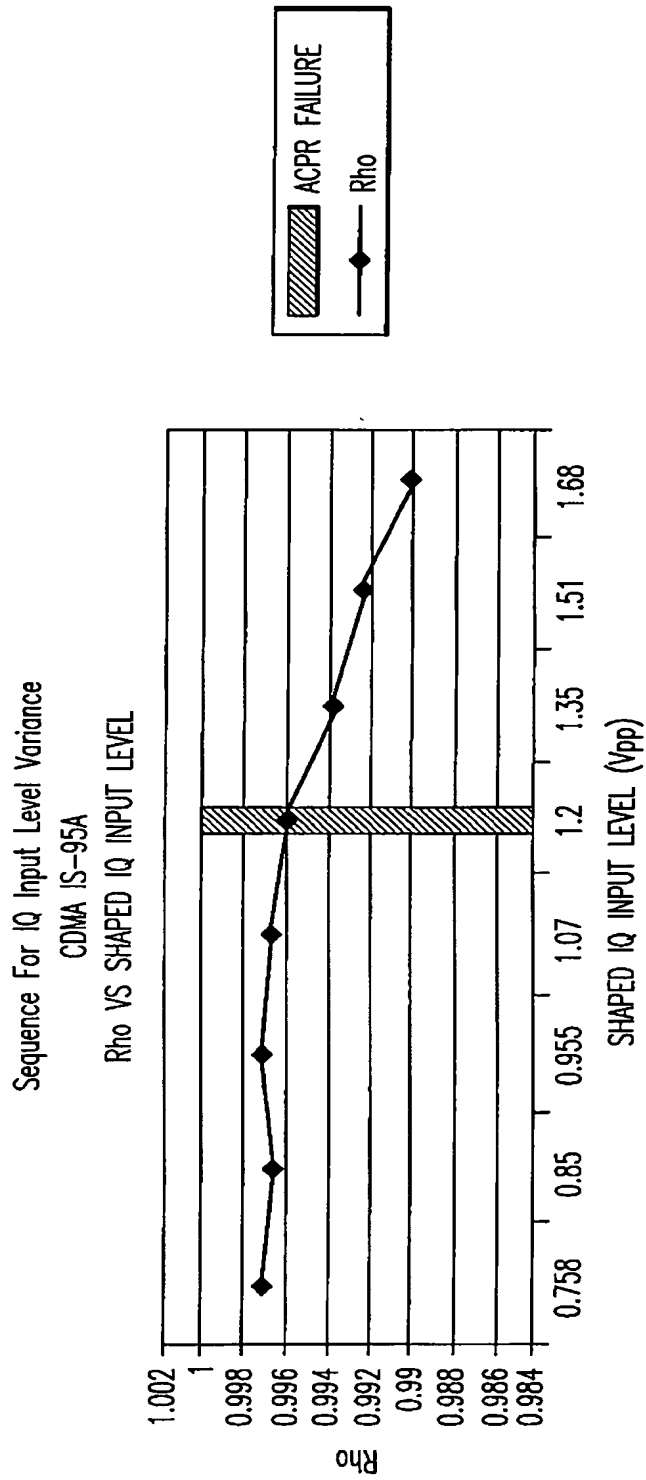


FIG. 60B

CDMA IS-95A  
TRANSMITTED CHANNEL POWER VS SHAPED IQ INPUT  
LEVEL

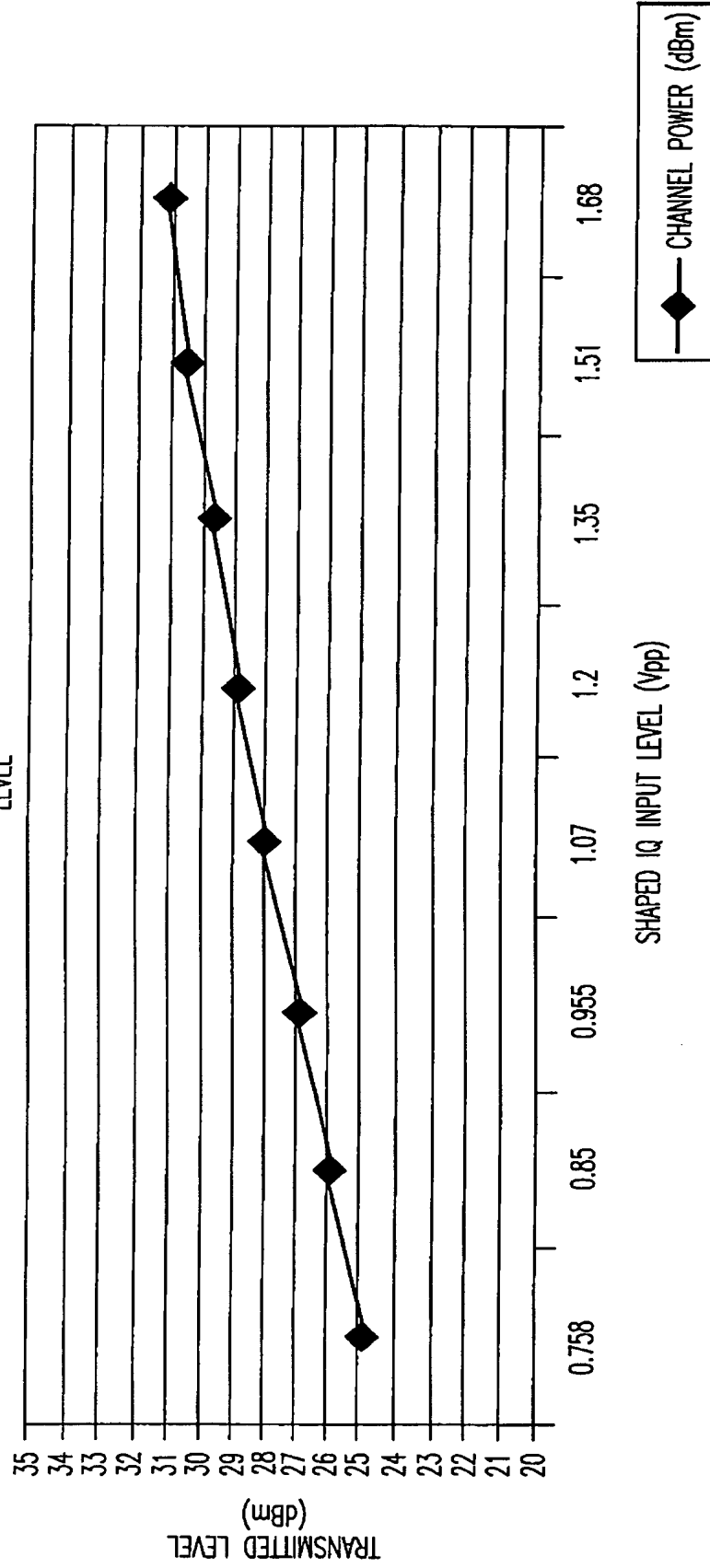


FIG.60C

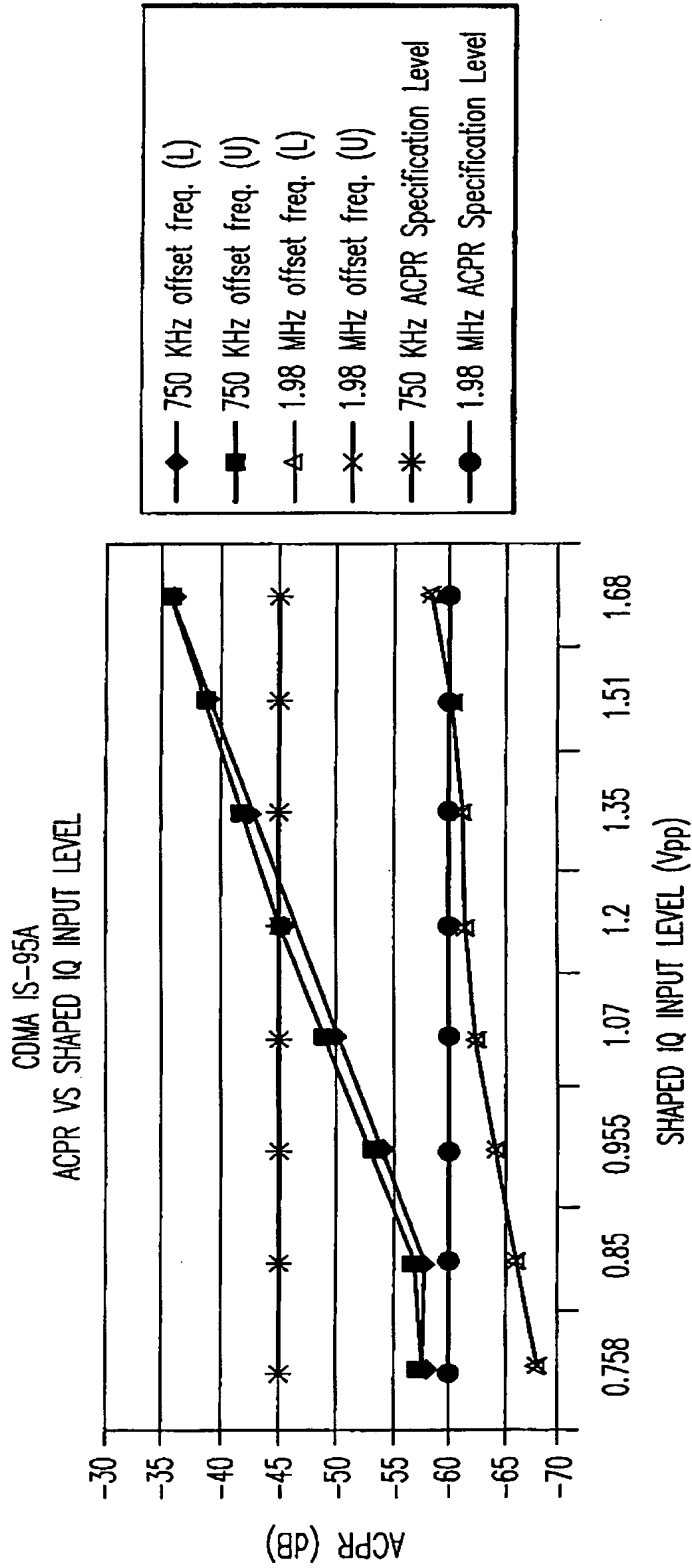


FIG.60D

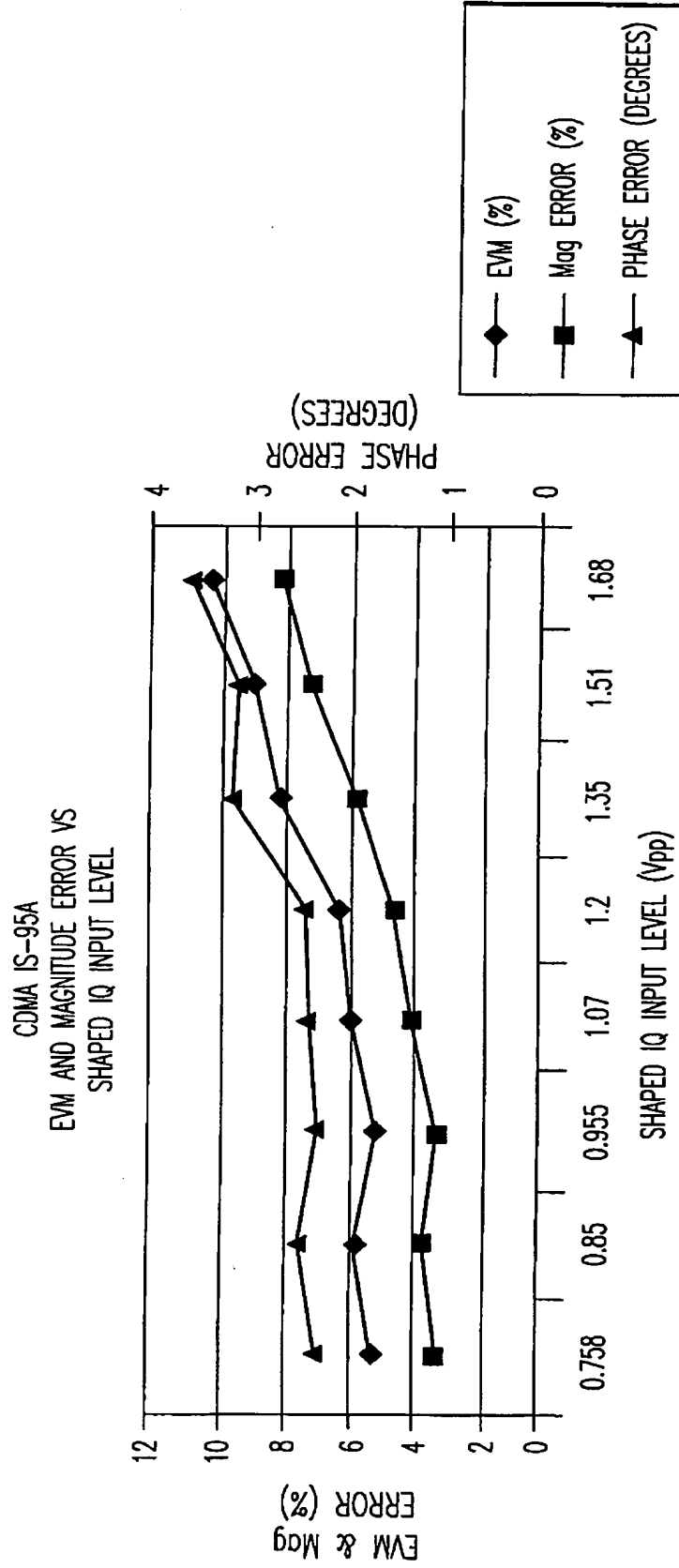


FIG.60E

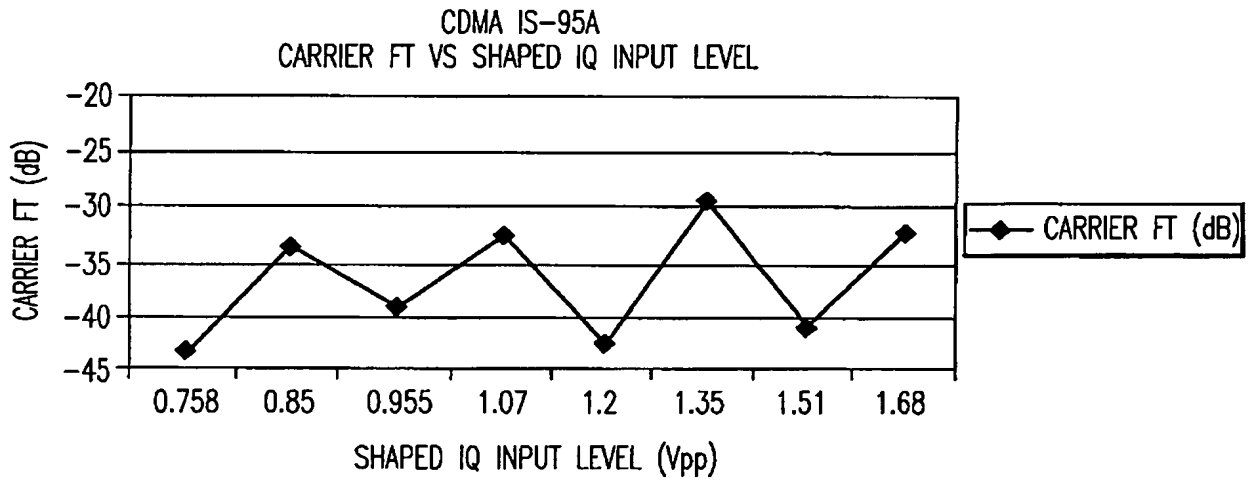


FIG.60F

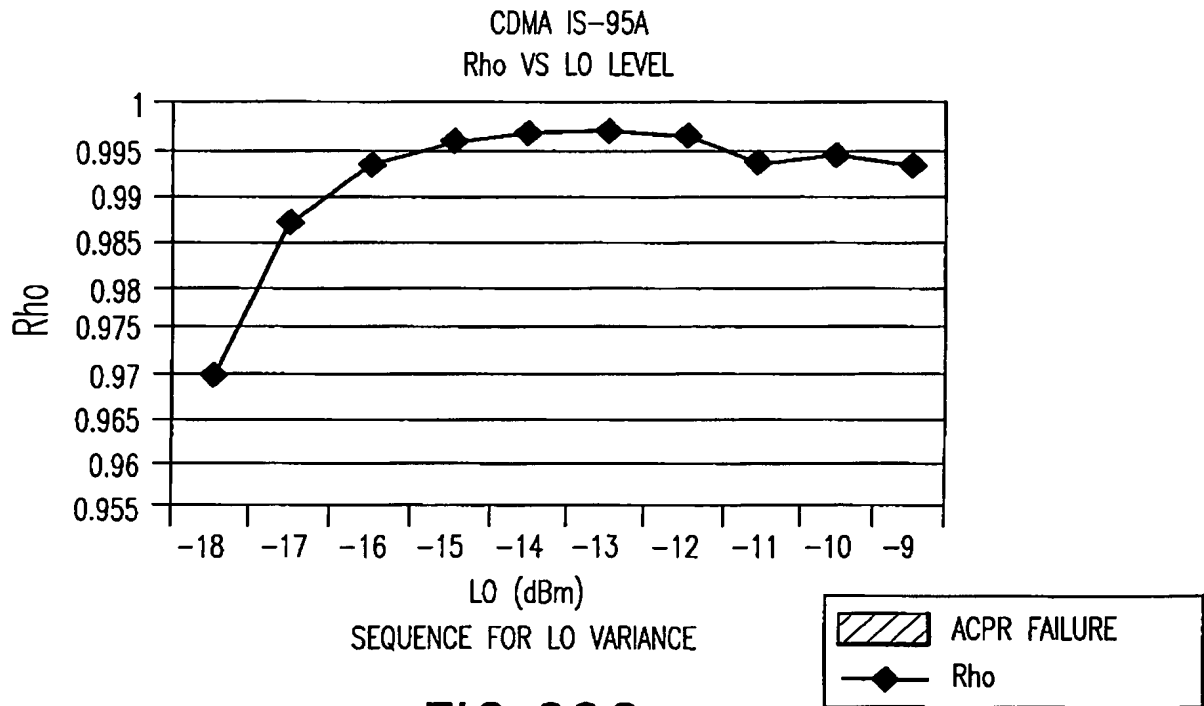


FIG.60G

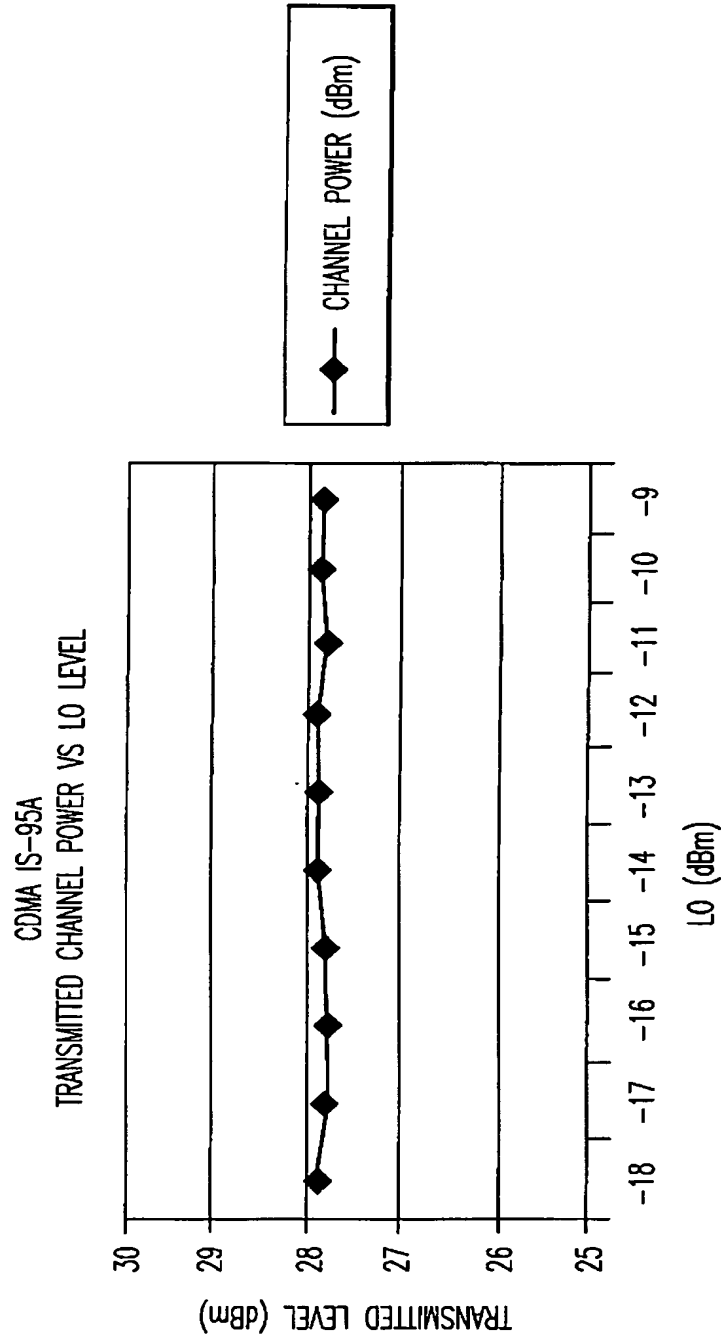


FIG. 60H

CDMA IS-95A  
 ACPR vs LO LEVEL

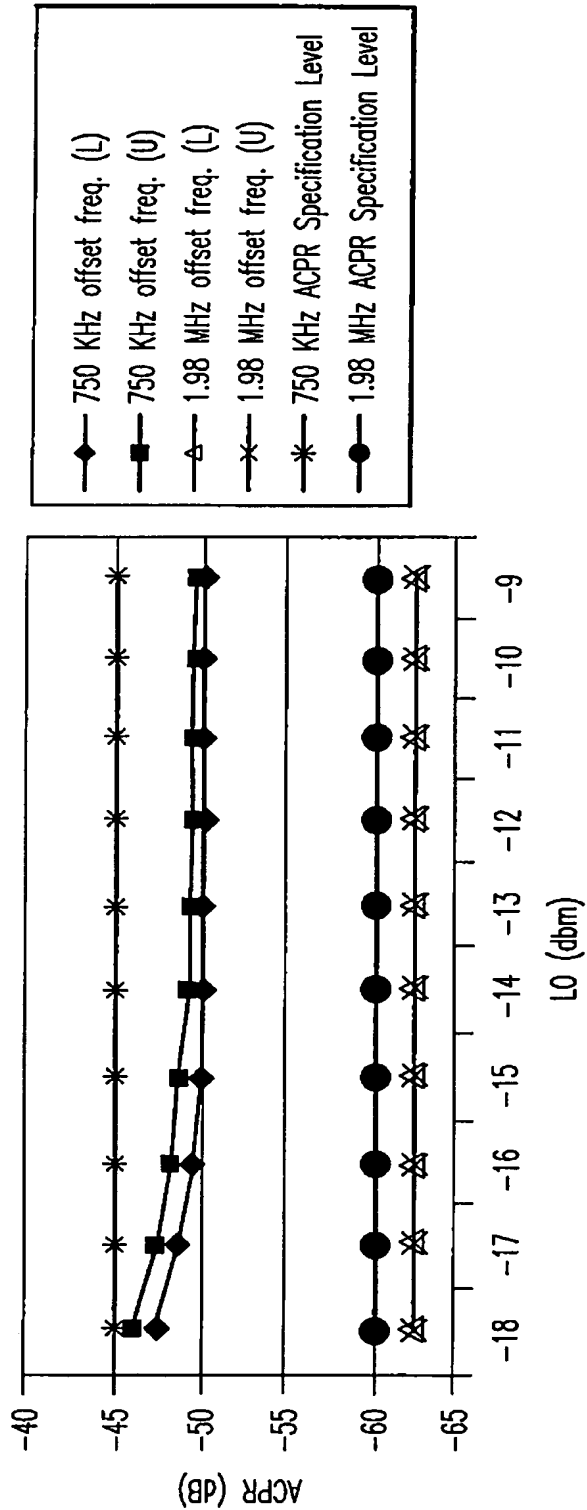
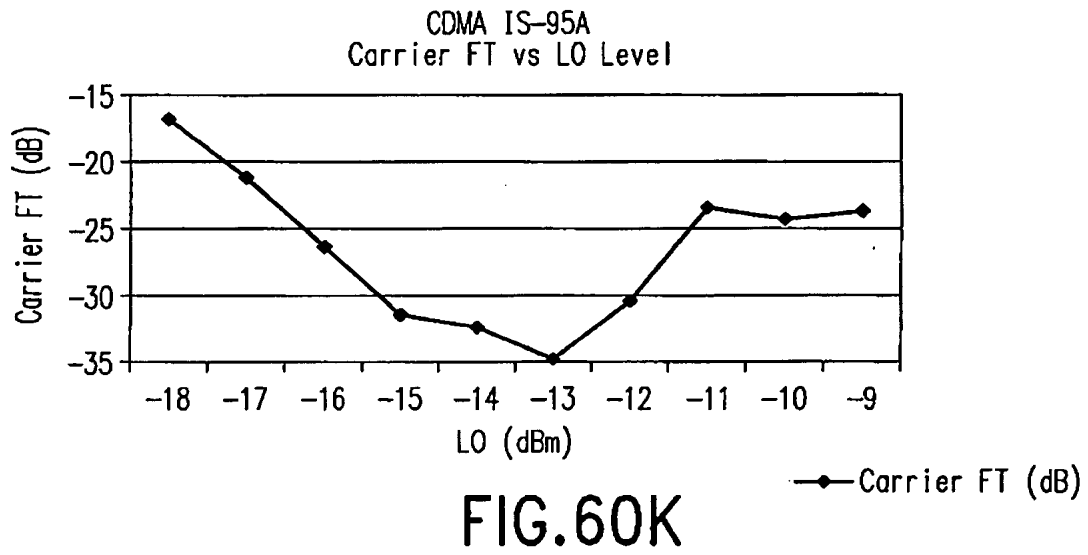
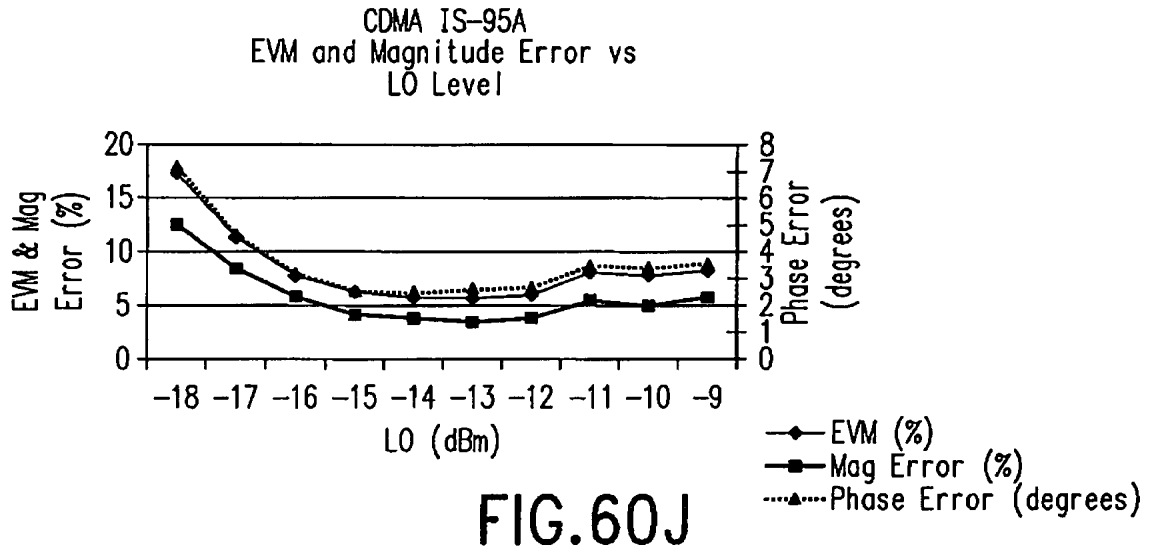


FIG. 60I



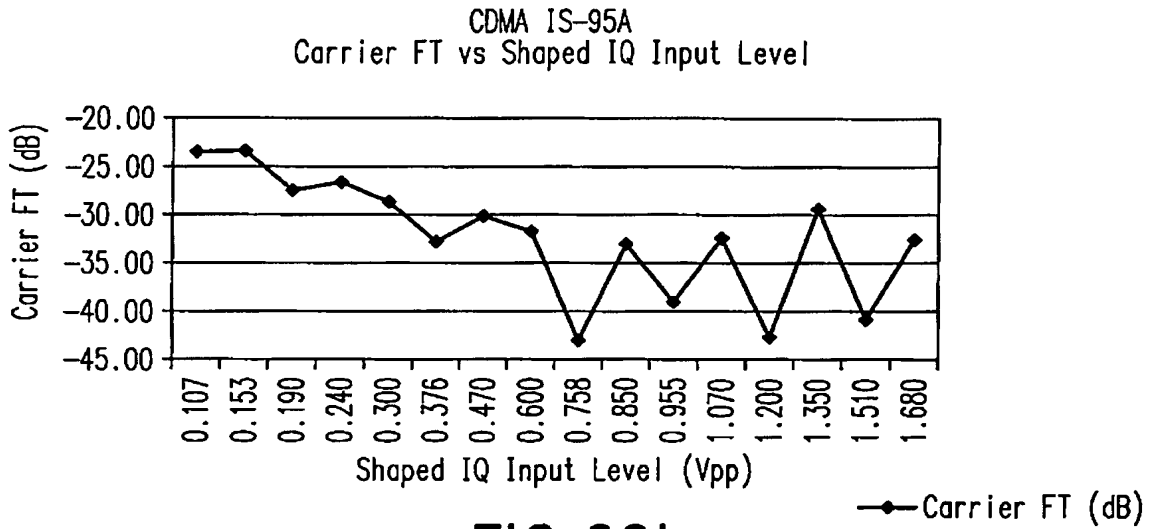
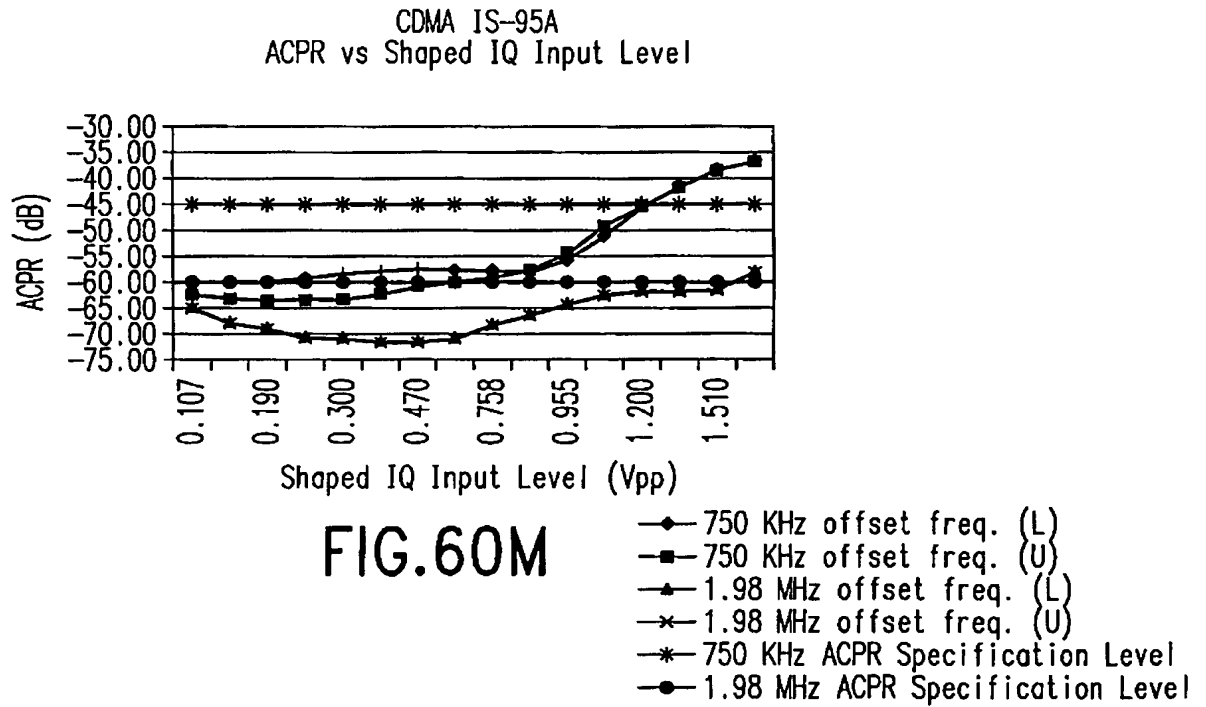


FIG.60L



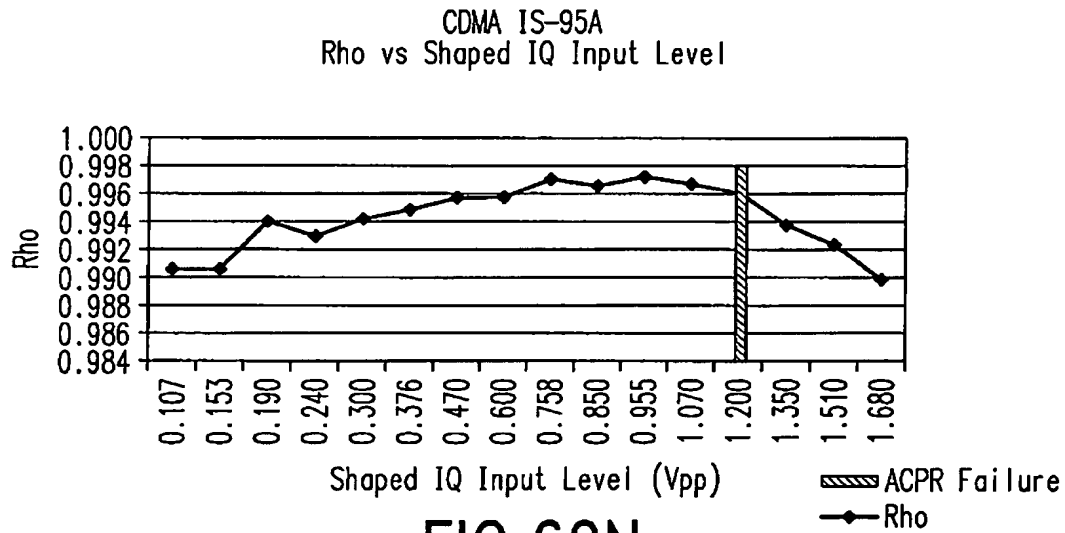


FIG.60N

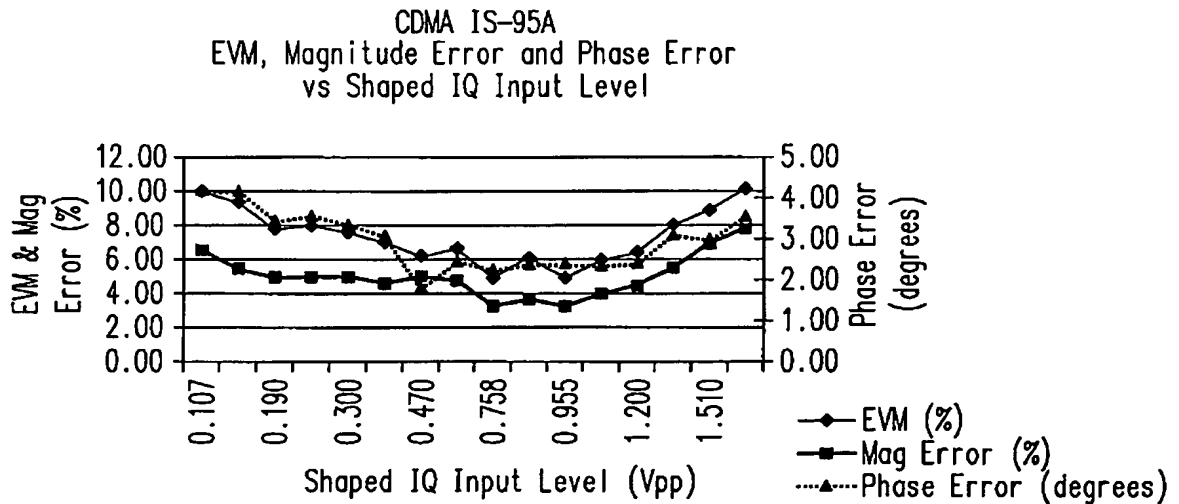


FIG.600

Sequence For IQ Input Level Variance  
 CDMA IS-95A Mobile Transmitter@+3.3V  
 Rho vs Shaped IQ Input Level

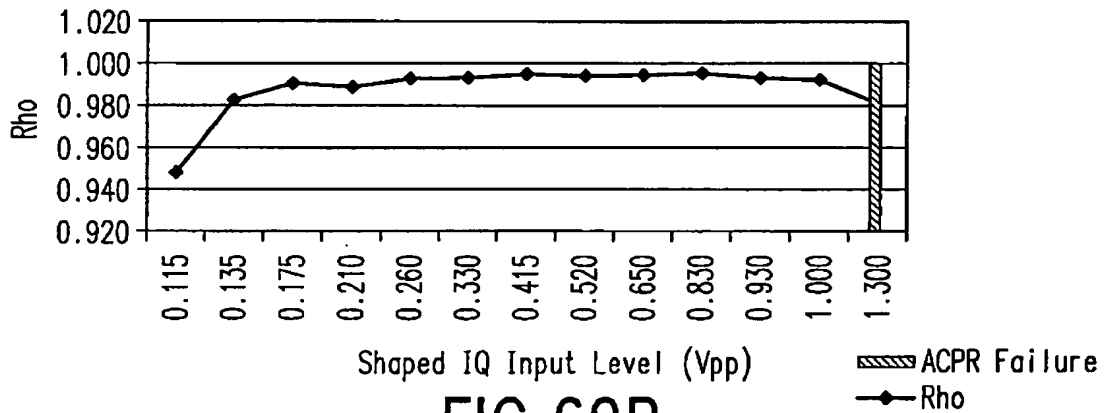


FIG.60P

CDMA IS-95A Mobile Transmitter@+3.3V  
 Transmitted Channel Power vs Shaped IQ Input Level

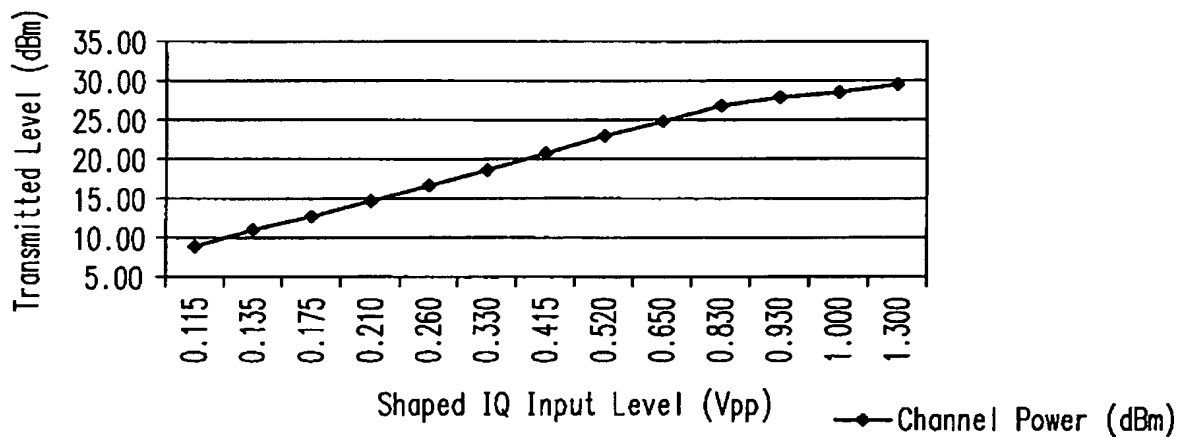
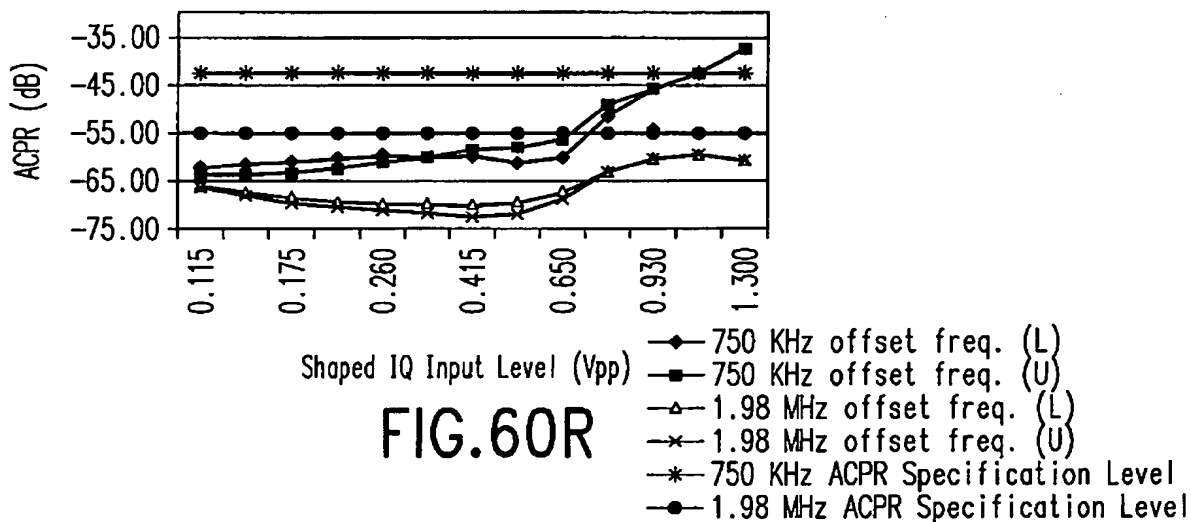
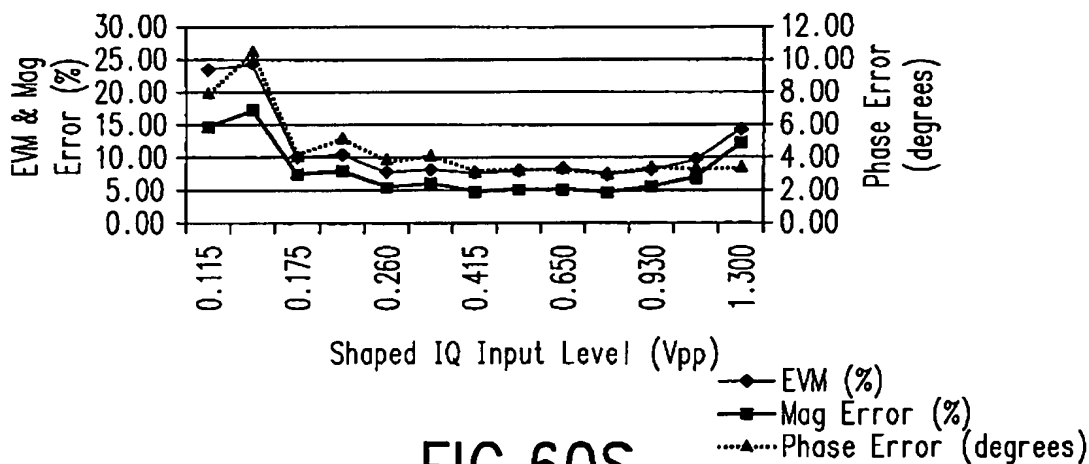


FIG.60Q

CDMA IS-95A Mobile Transmitter@+3.3V  
 ACPR vs Shaped IQ Input Level



CDMA IS-95A Mobile Transmitter@+3.3V  
 EVM, Magnitude Error and Phase Error  
 vs Shaped IQ Input Level



CDMA IS-95A Mobile Transmitter@+3.3V  
 Carrier FT vs Shaped IQ Input Level

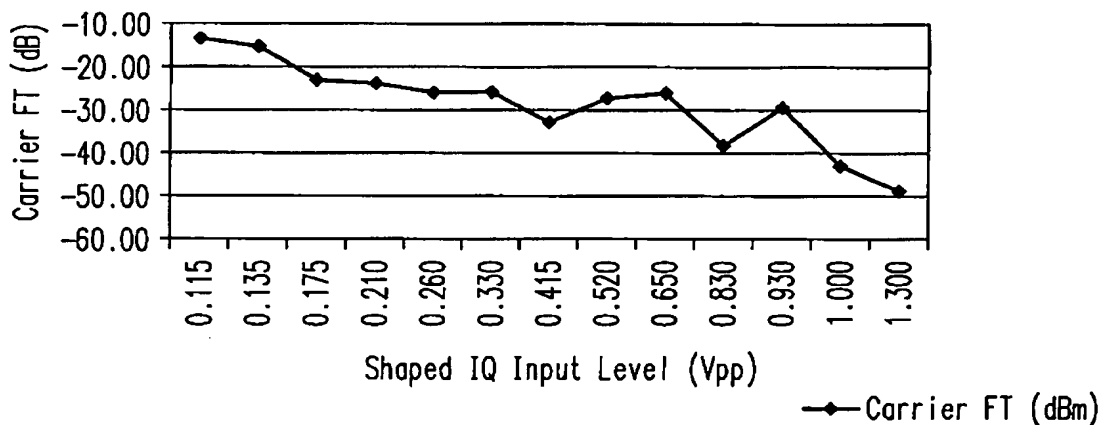


FIG.60T

Sequence For LO Variance  
 CDMA IS-95A Mobile Transmitter@+3.3V  
 Rho vs LO Level

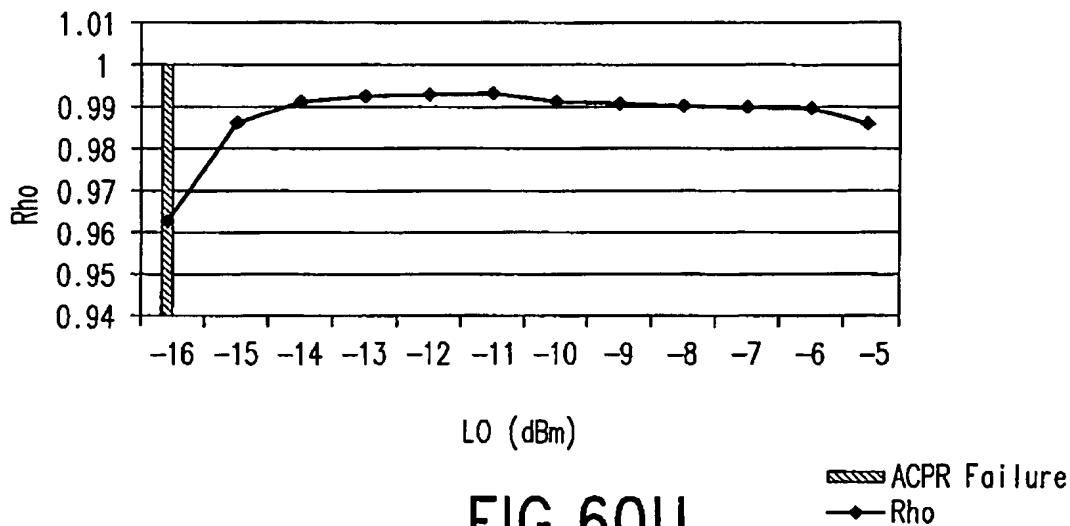


FIG.60U

CDMA IS-95A Mobile Transmitter@+3.3V  
 Transmitted Channel Power vs LO Level

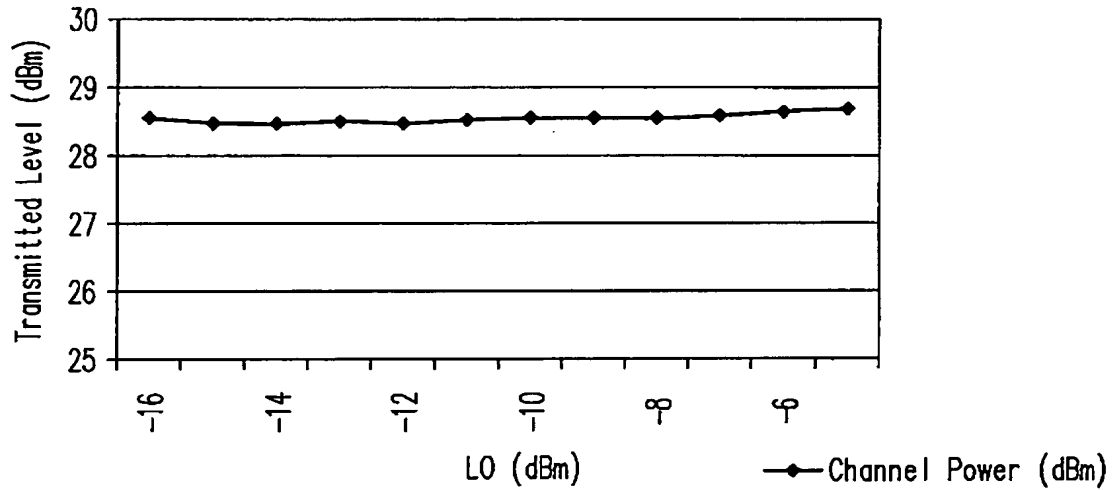


FIG.60V

CDMA IS-95A Mobile Transmitter@+3.3V  
 ACPR vs LO Level

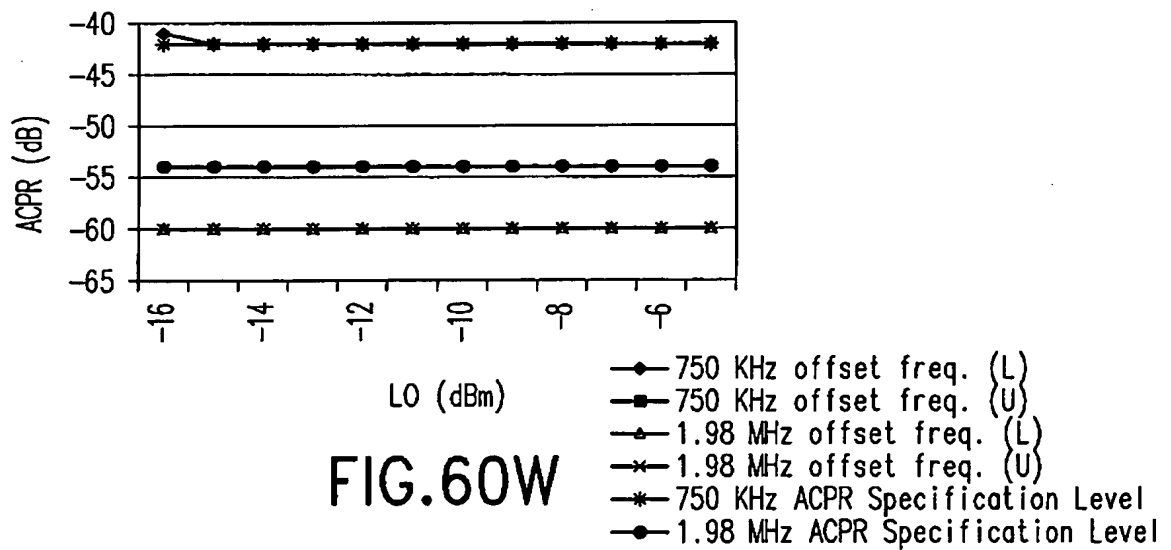
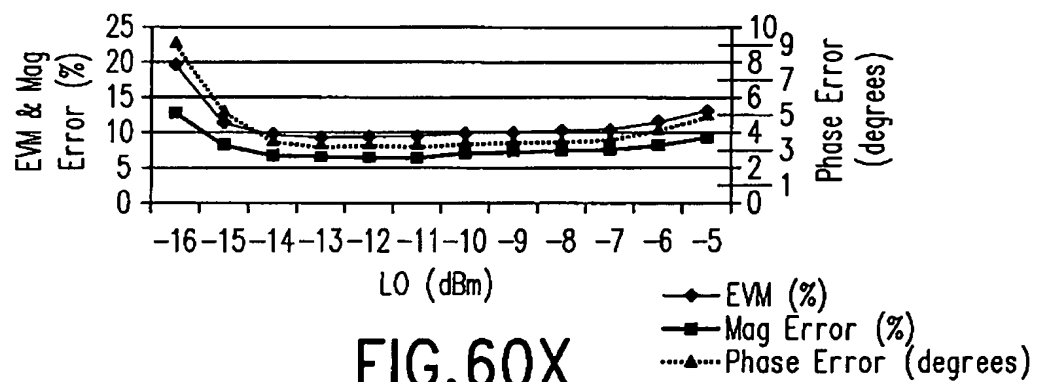
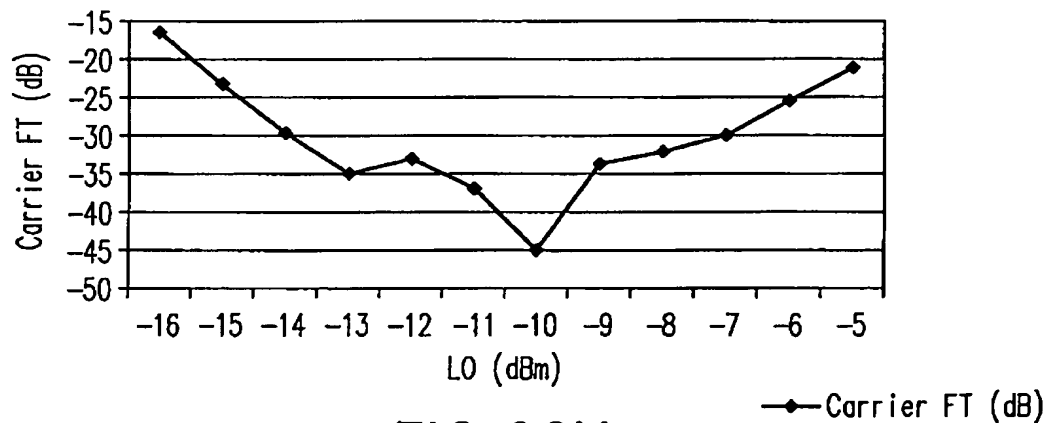


FIG.60W

CDMA IS-95A Mobile Transmitter@+3.3V  
 EVM and Magnitude Error vs  
 LO Level



CDMA IS-95A Mobile Transmitter@+3.3V  
 Carrier FT vs LO Level



QUANTITY	DESCRIPTION	VOLTAGE	TOTAL CURRENT	POWER
2	D2D CORES	3.3	4mA	13.2mW
2	BASEBAND INTERFACE CIRCUITS WITH/BW LIMIT	3.3	6mA	21.8mW
1	CLOCK CIRCUIT	3.3	5mA	20.0mW
			SUB TOTAL	54.0mW

FIG.60Z

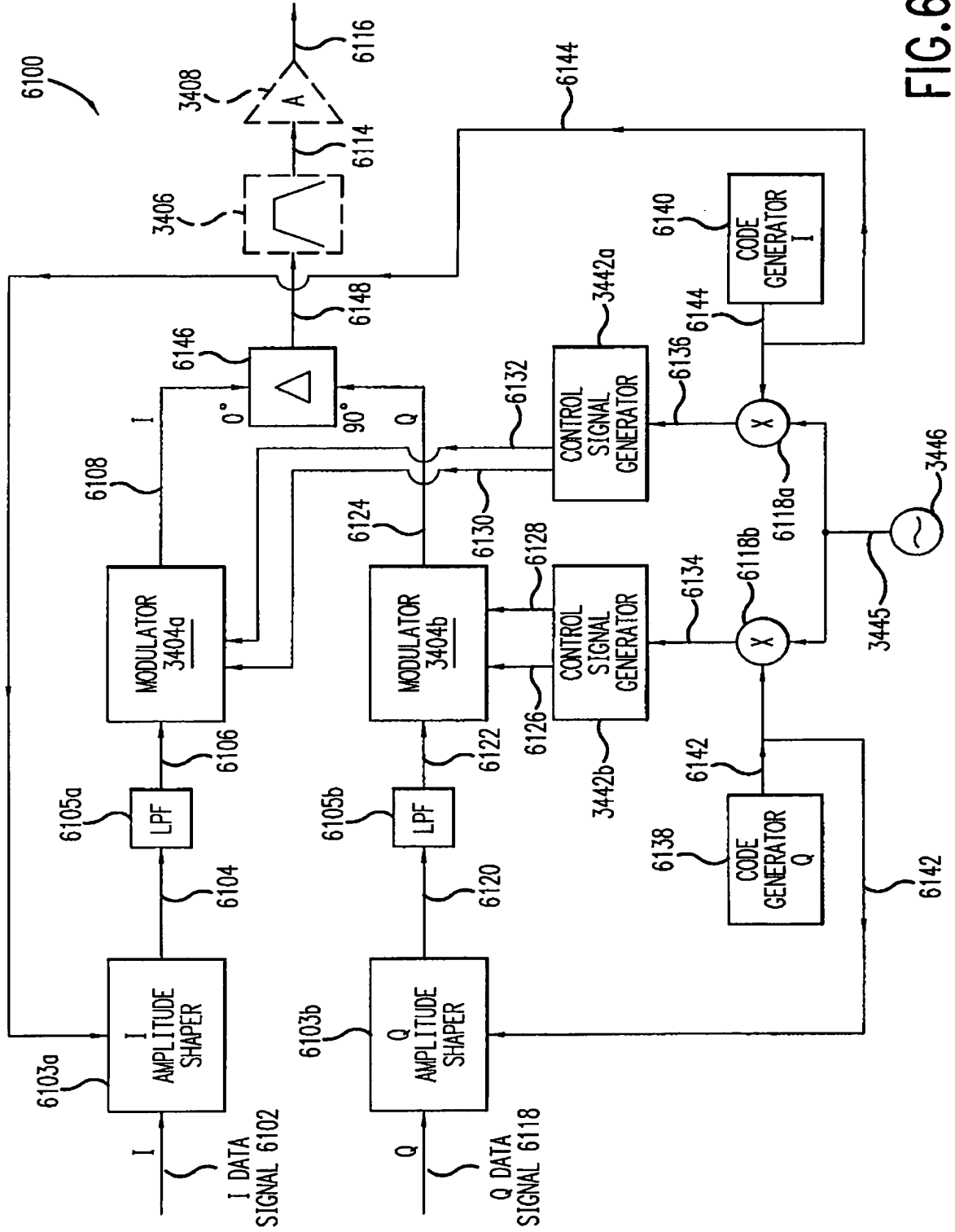


FIG. 61A

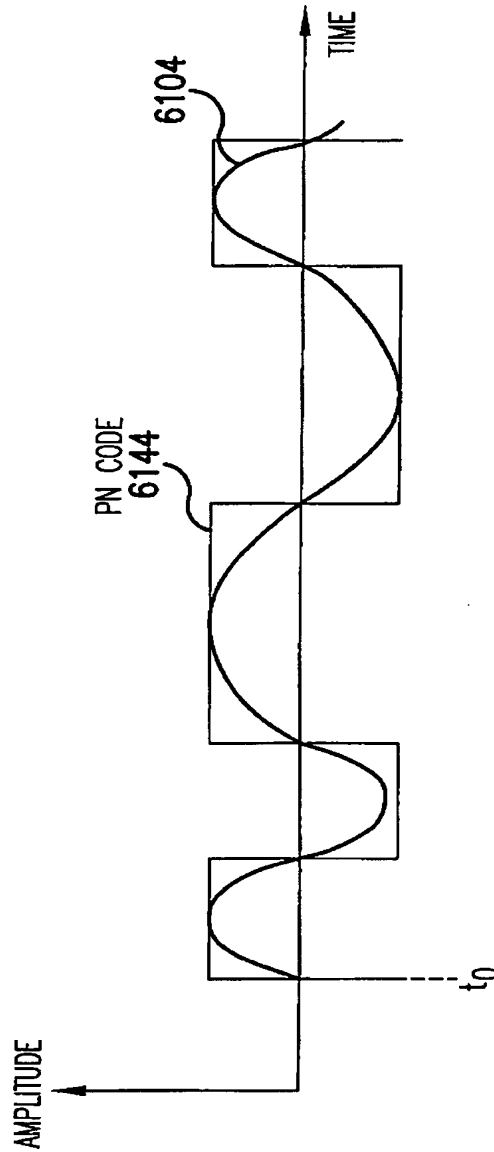


FIG. 61B

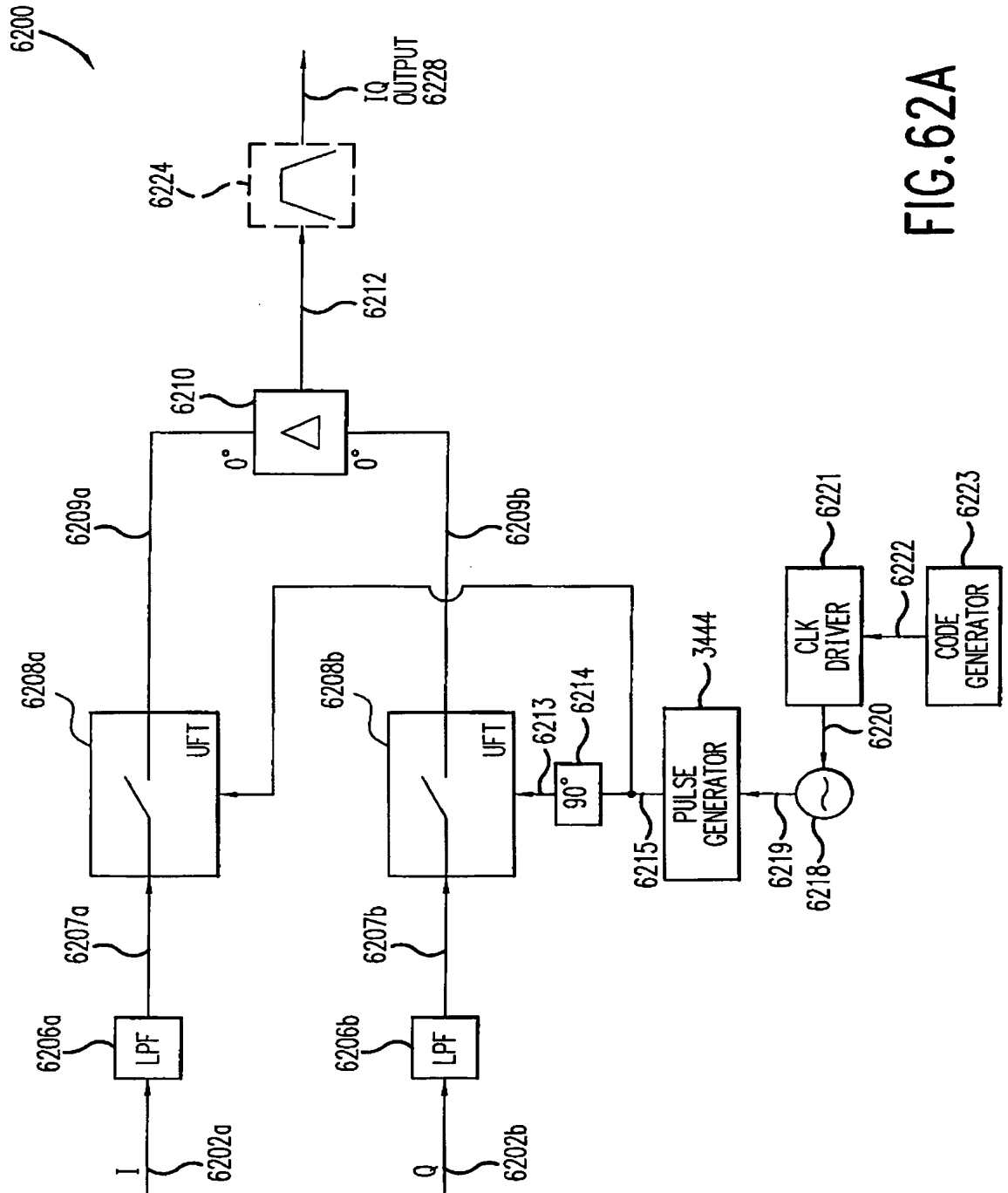


FIG. 62A

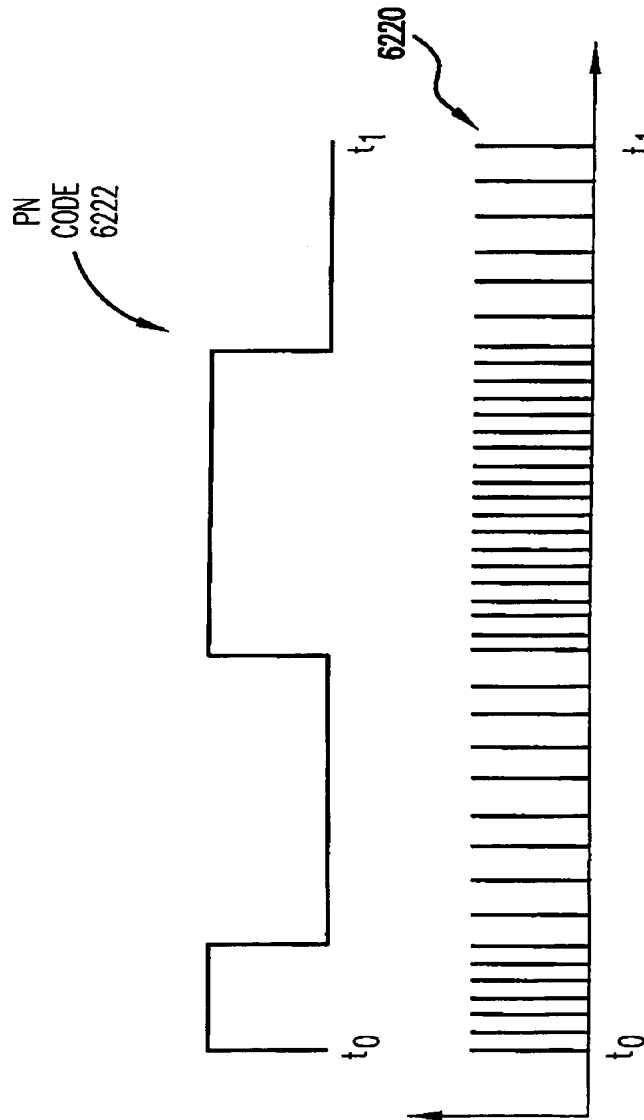


FIG. 62B

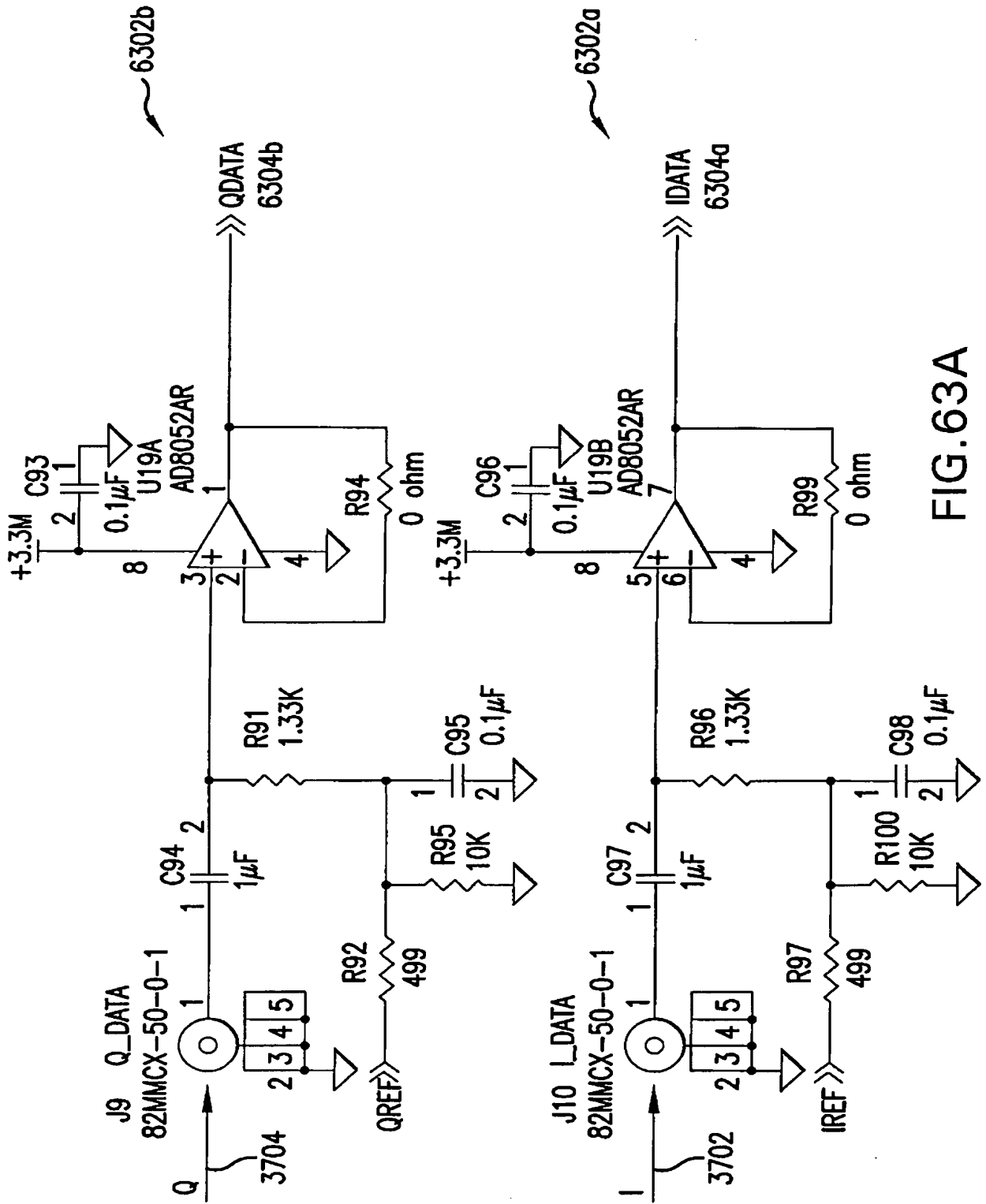


FIG. 63A

FIG.63 B-1	FIG.63 B-2	FIG.63 B-3	FIG.63 B-4
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FIG.63B

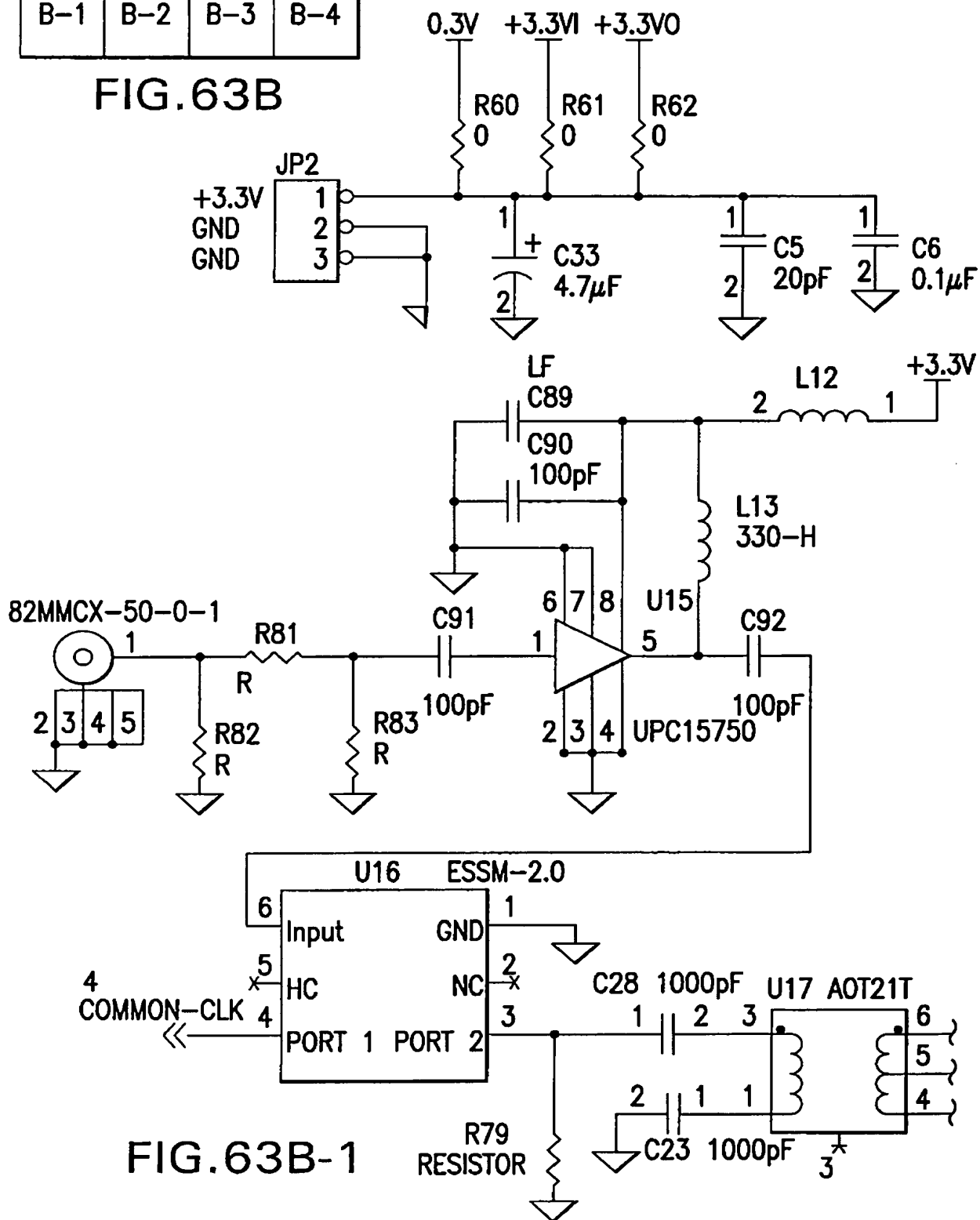


FIG.63B-1

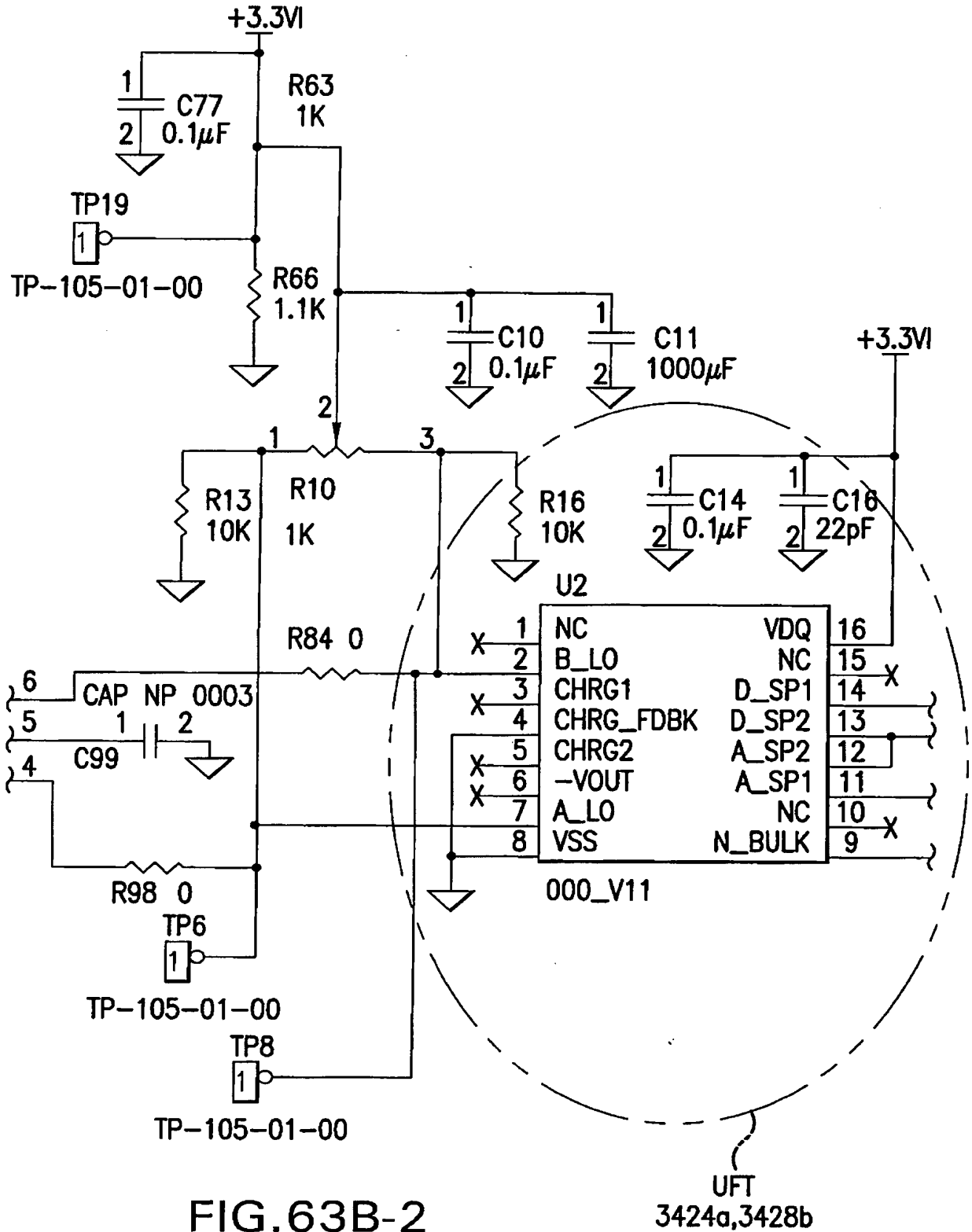


FIG. 63B-2

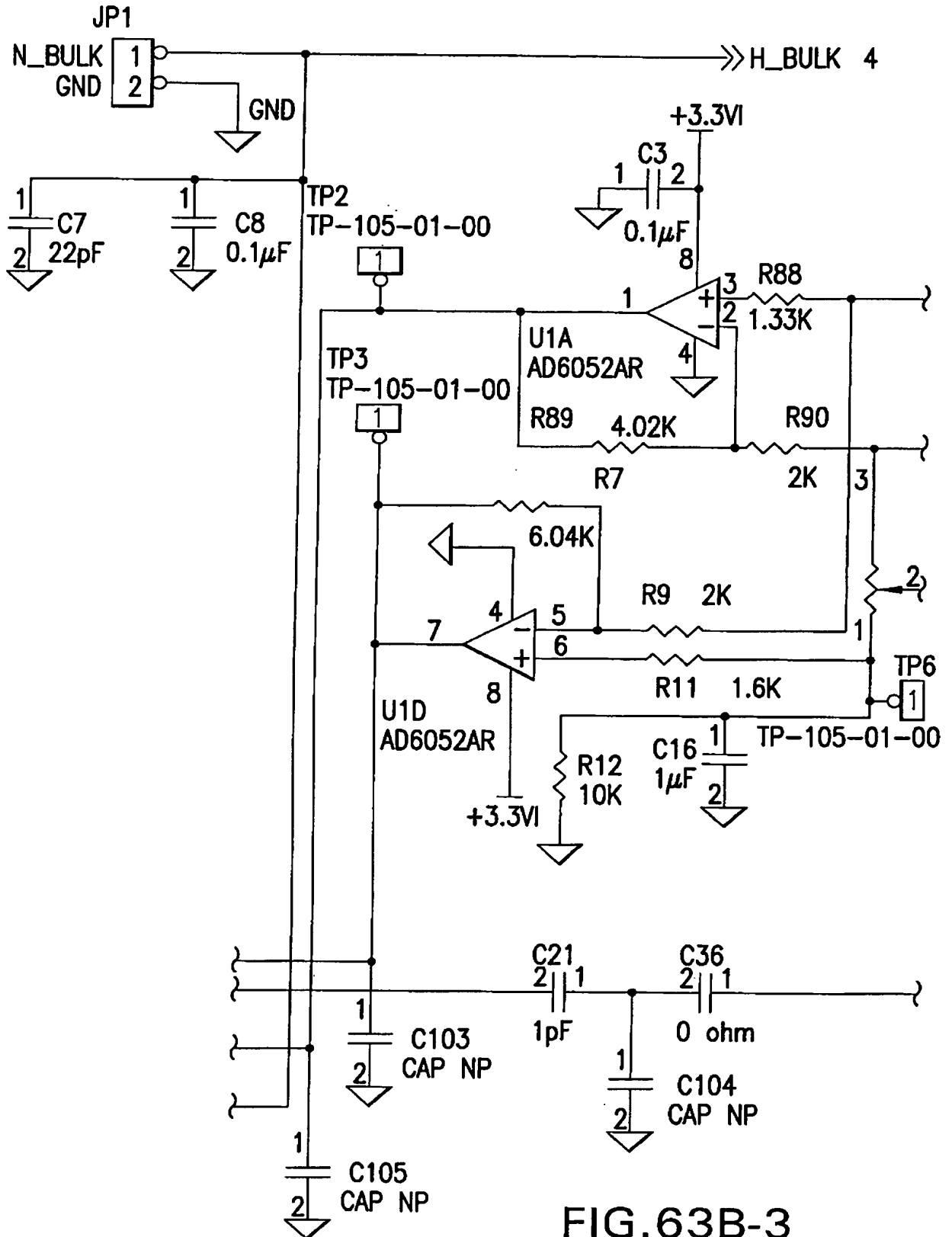


FIG. 63B-3

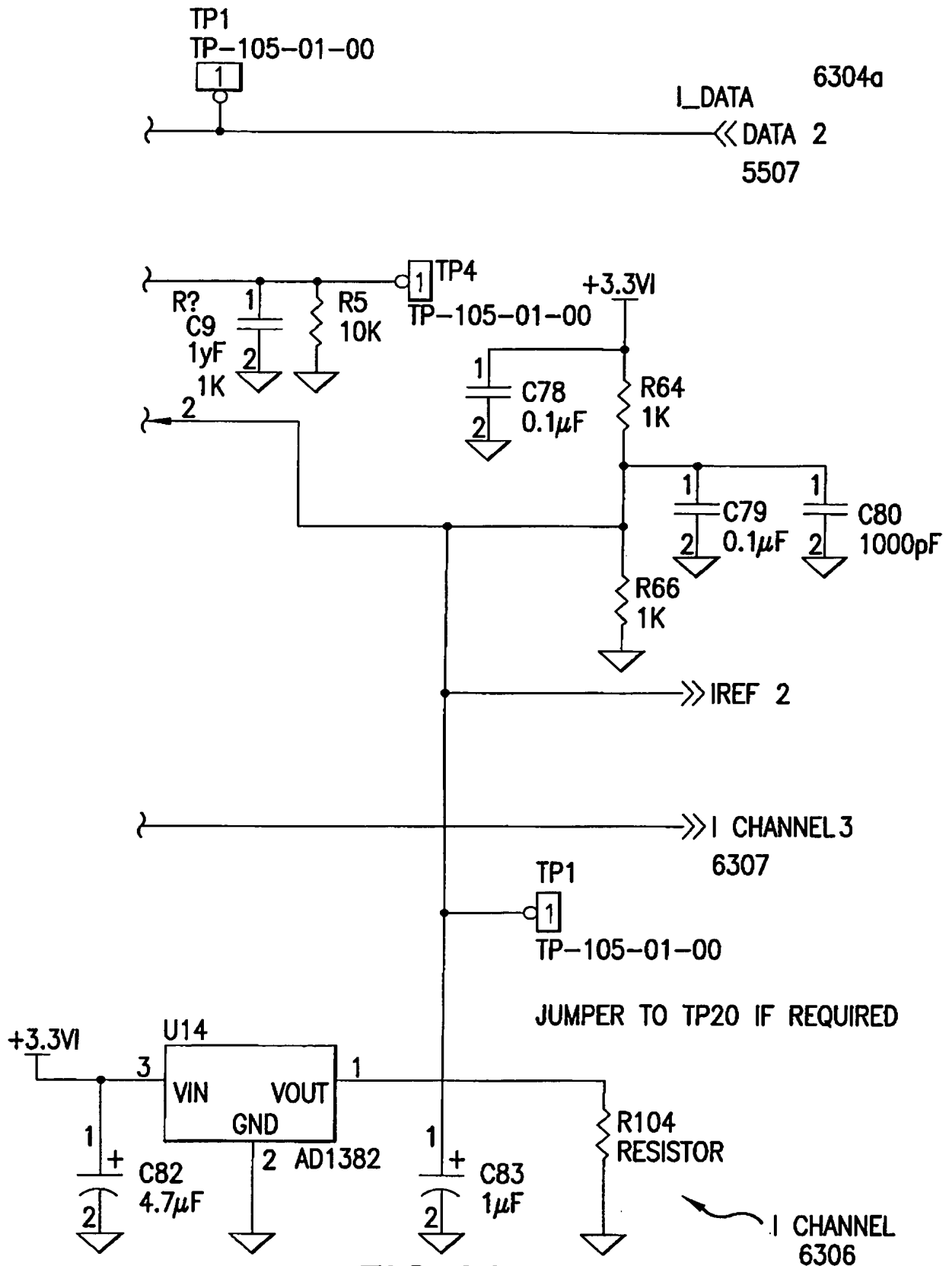
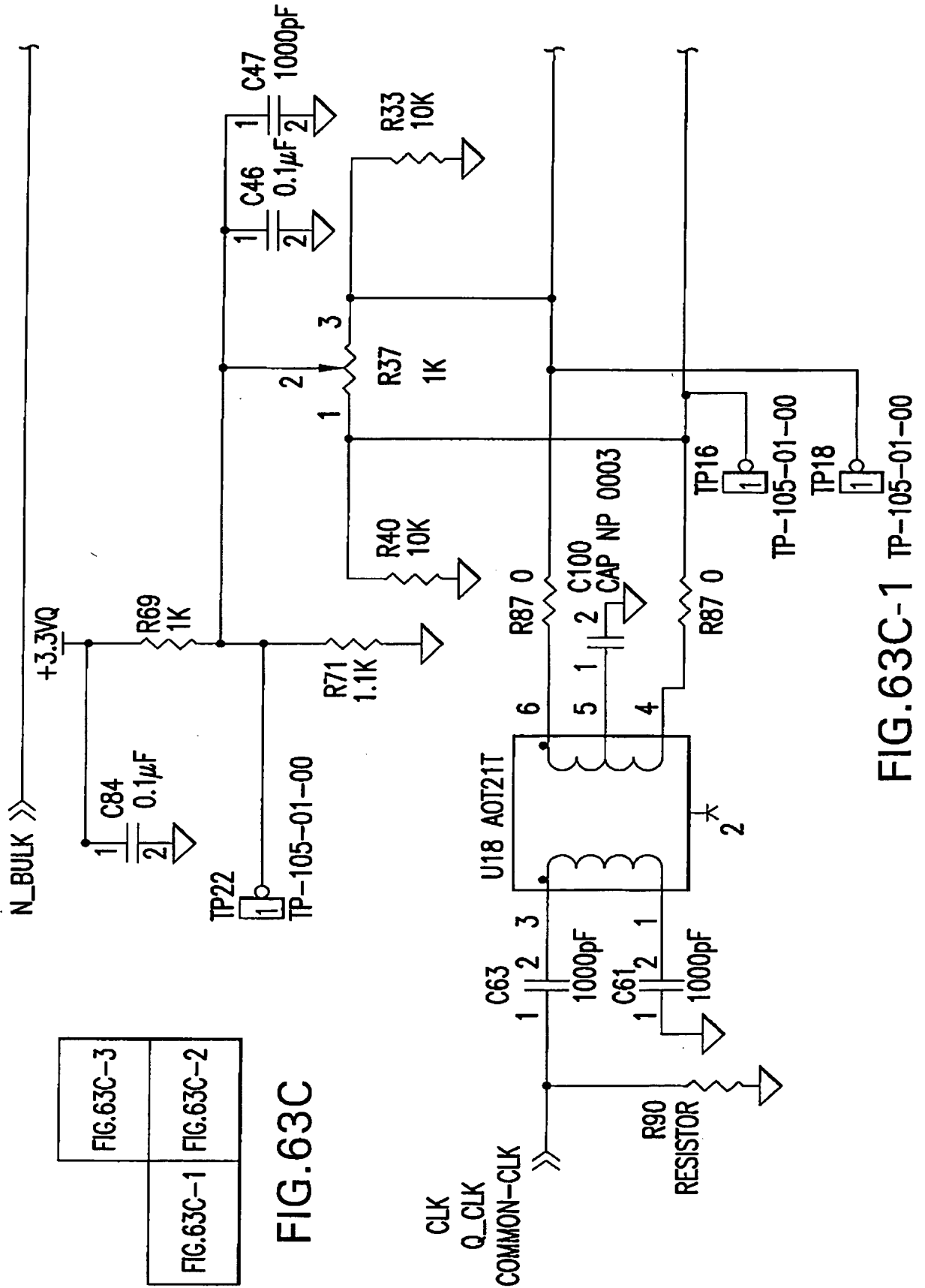


FIG. 63B-4





**FIG. 63C-2**

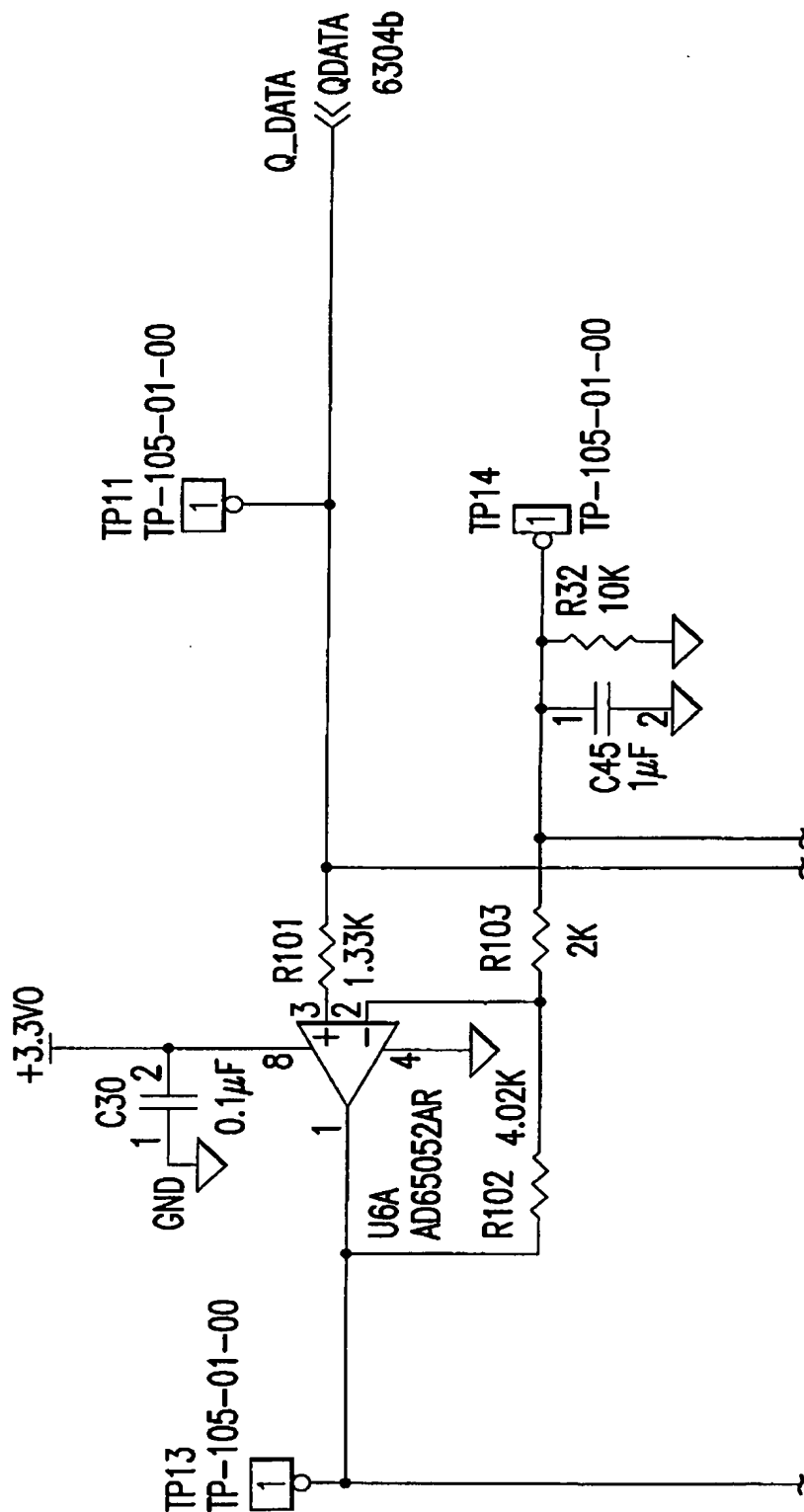
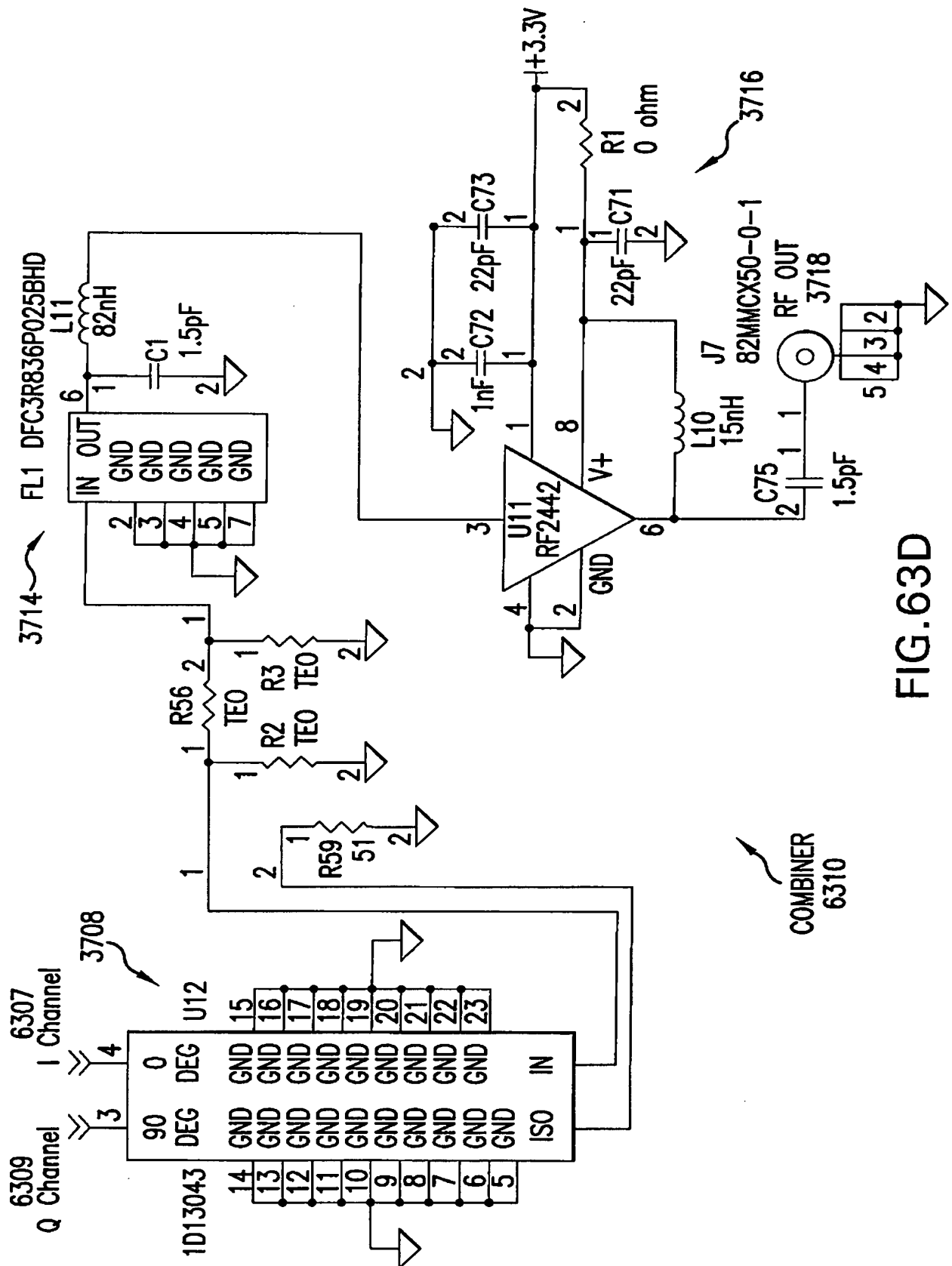
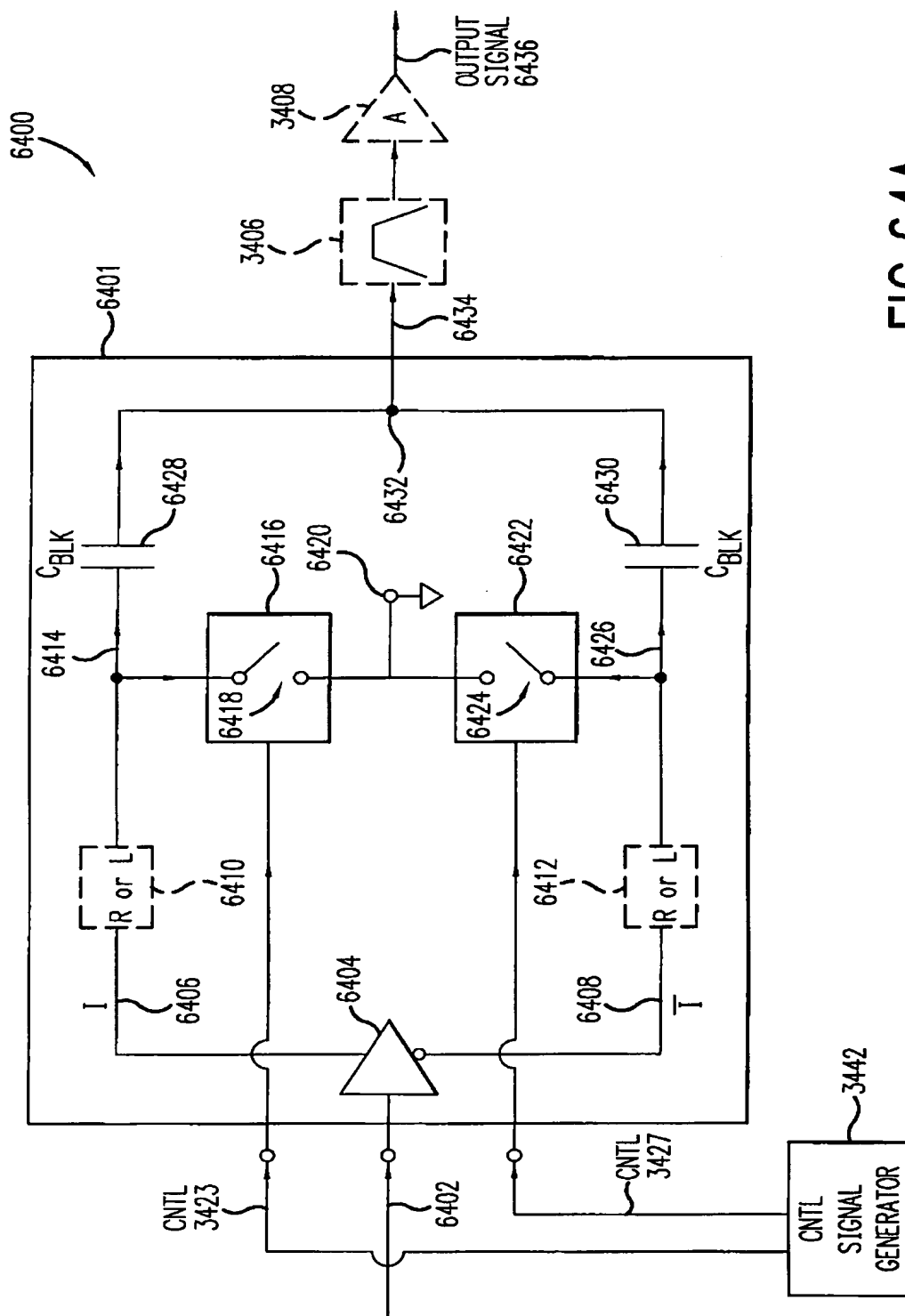


FIG.63C-3





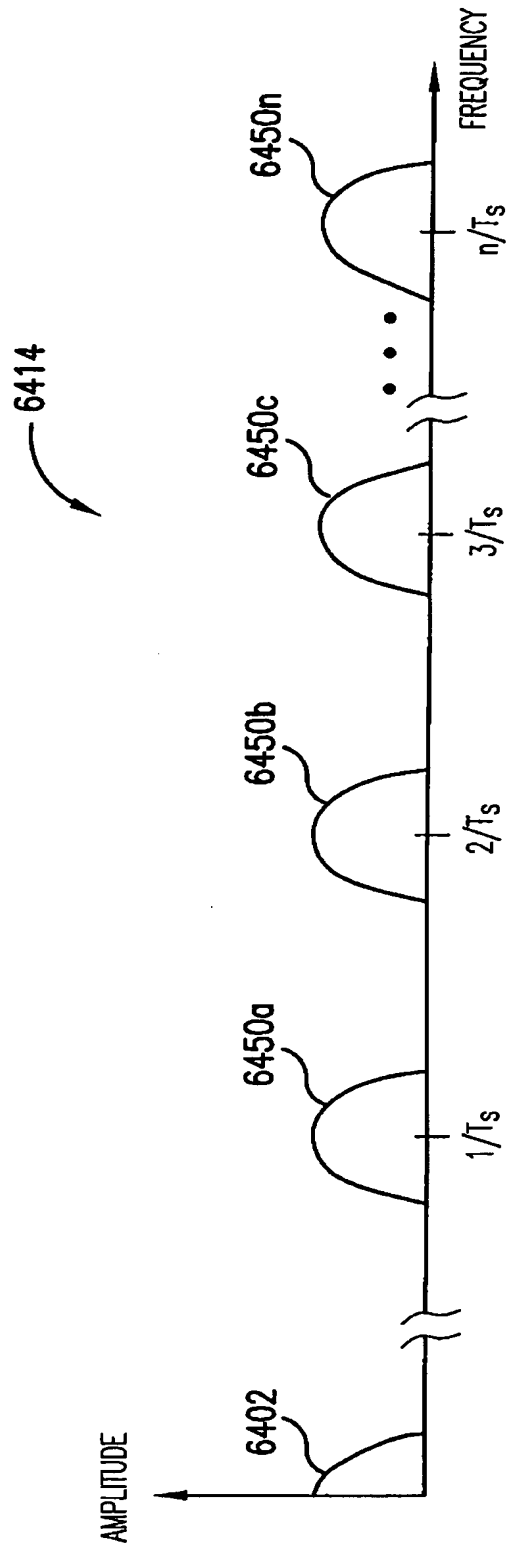


FIG. 64B

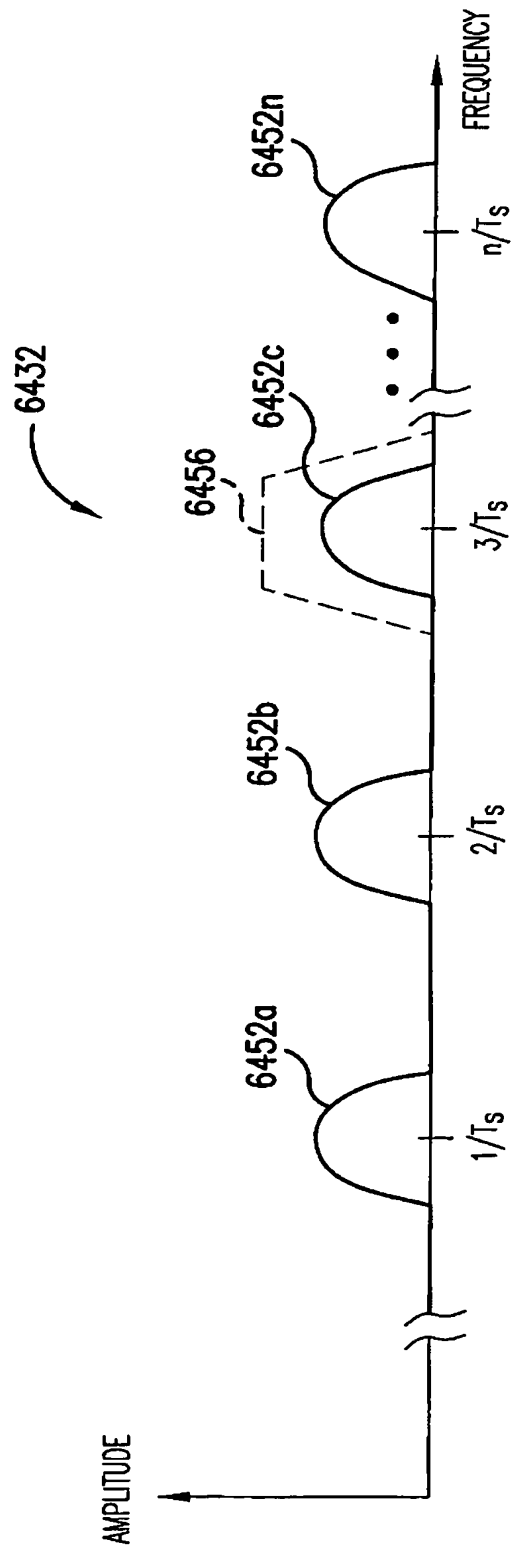


FIG. 64C



**FIG. 64D**

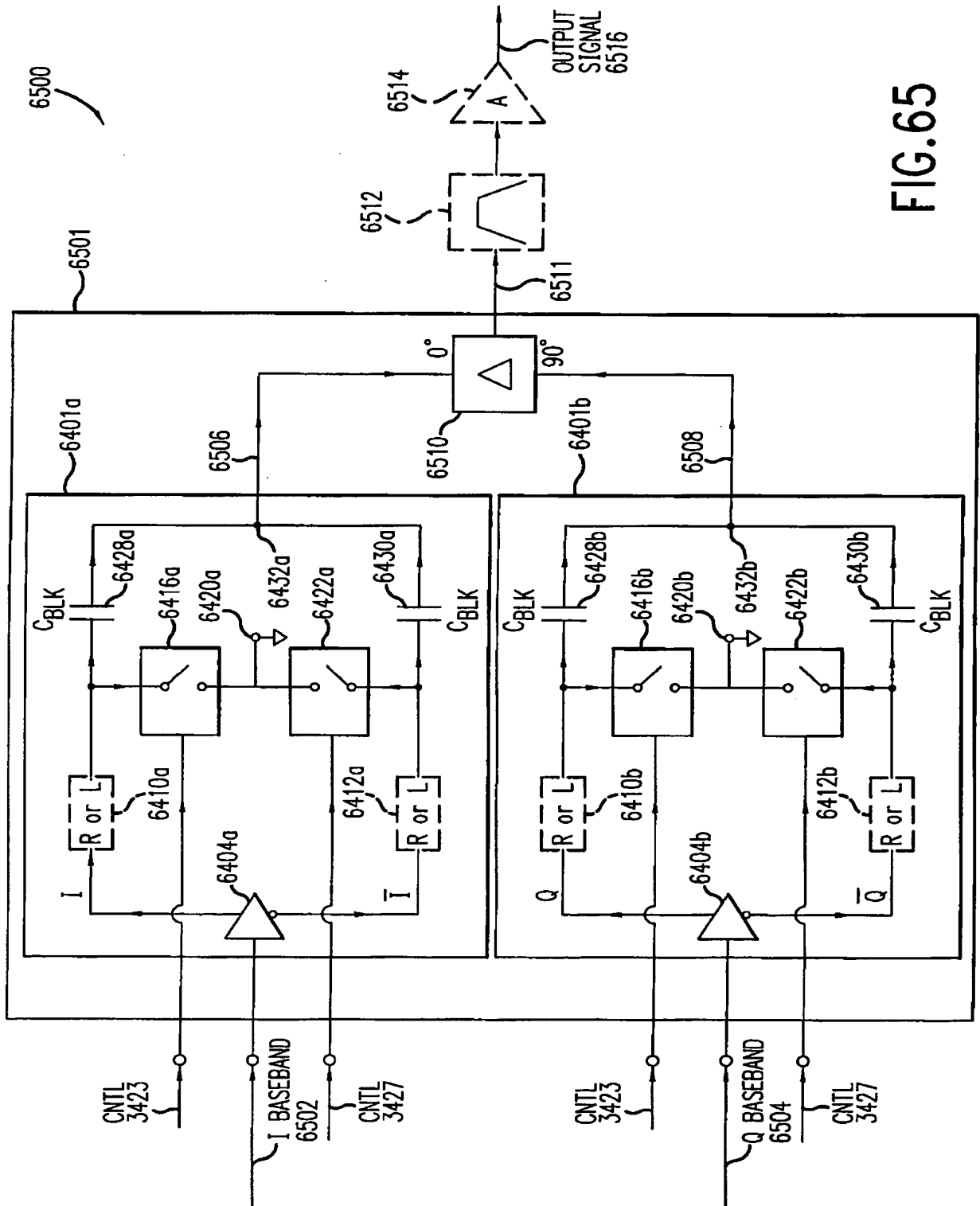


FIG. 65

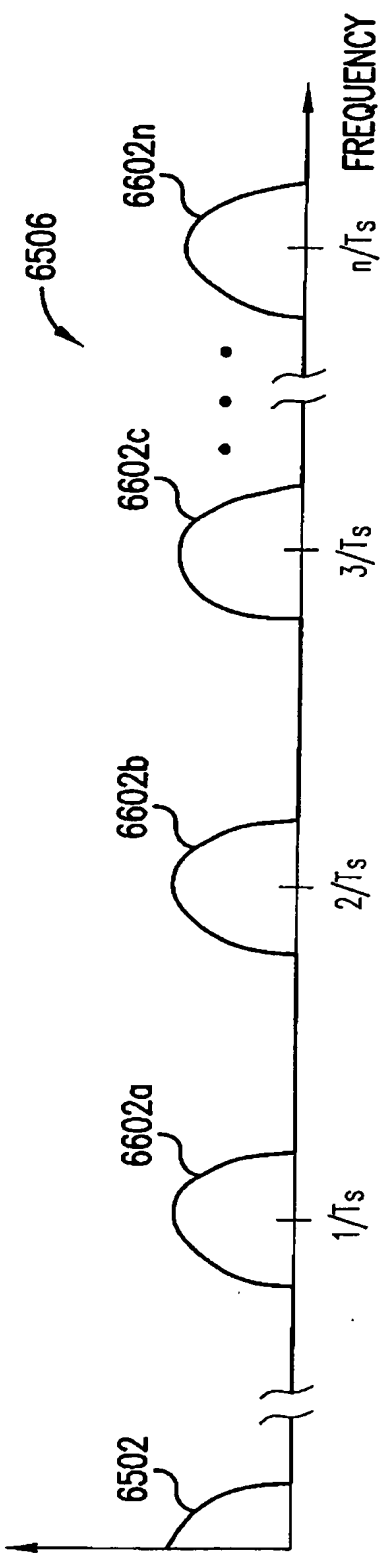


FIG. 66A

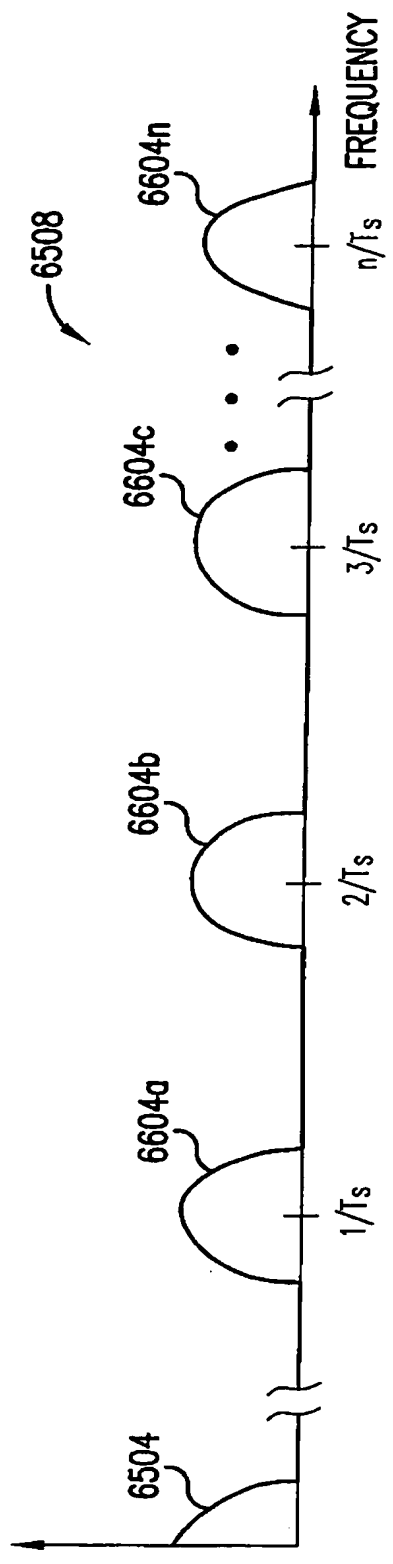


FIG. 66B

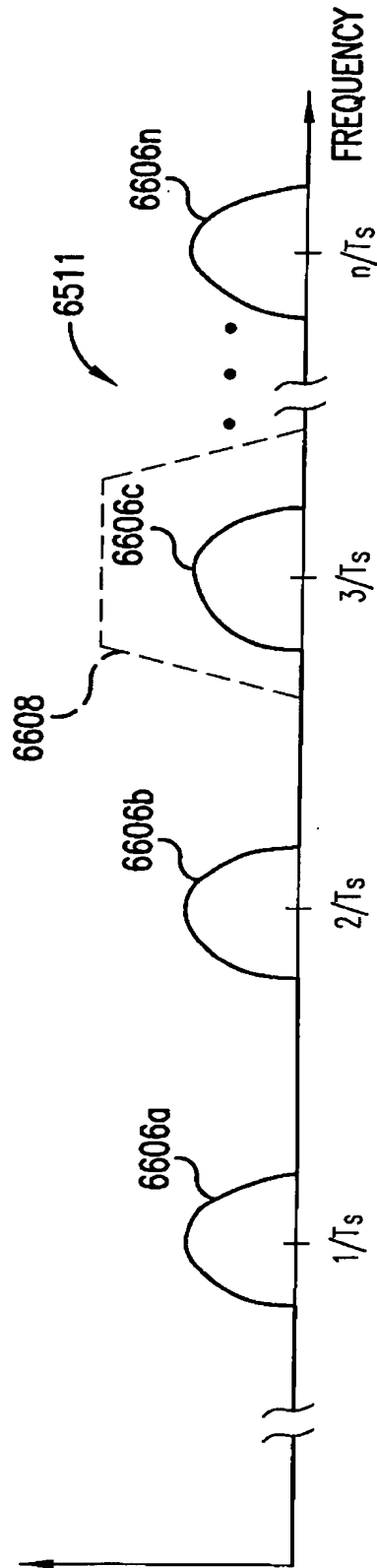


FIG. 66C

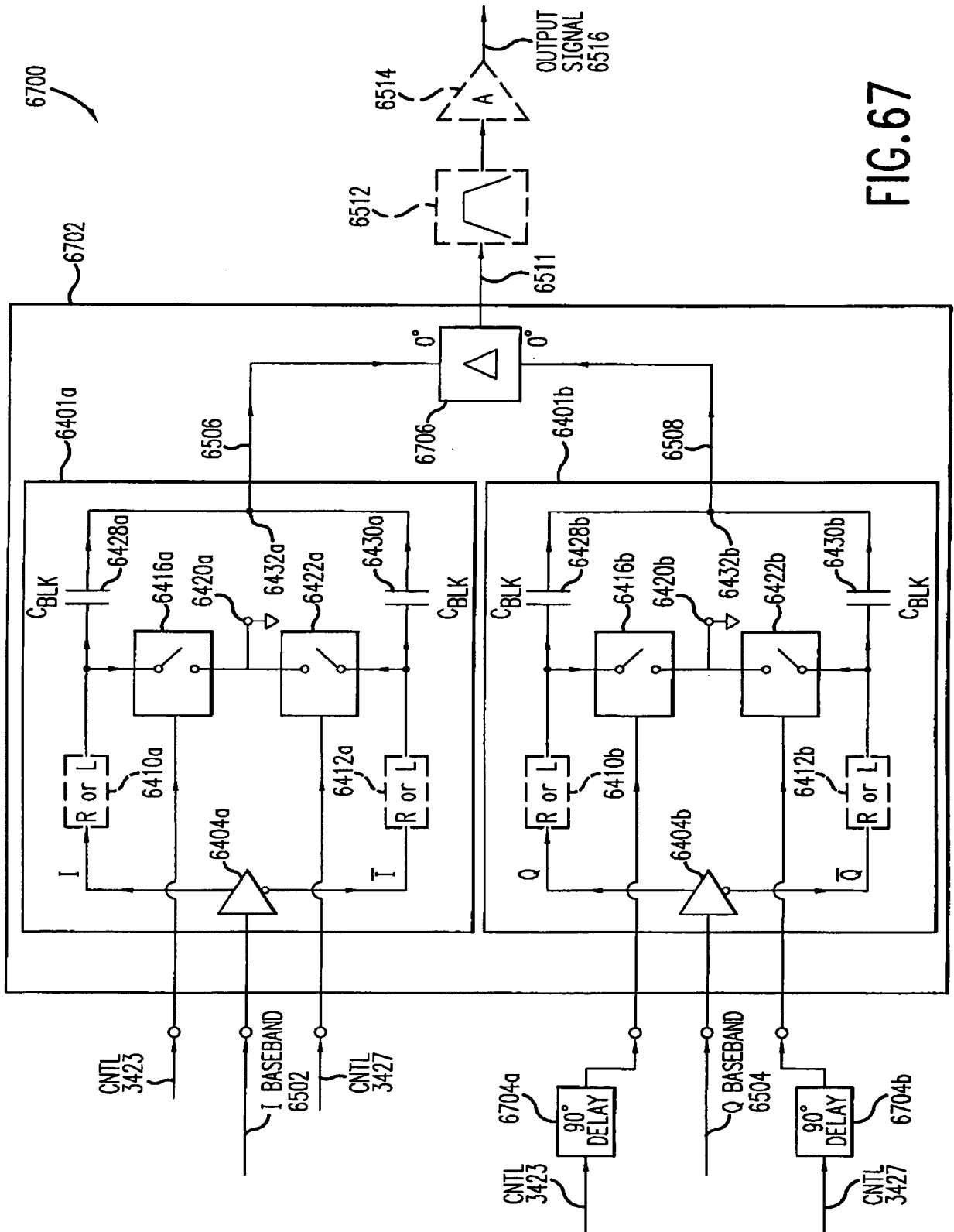


FIG. 67

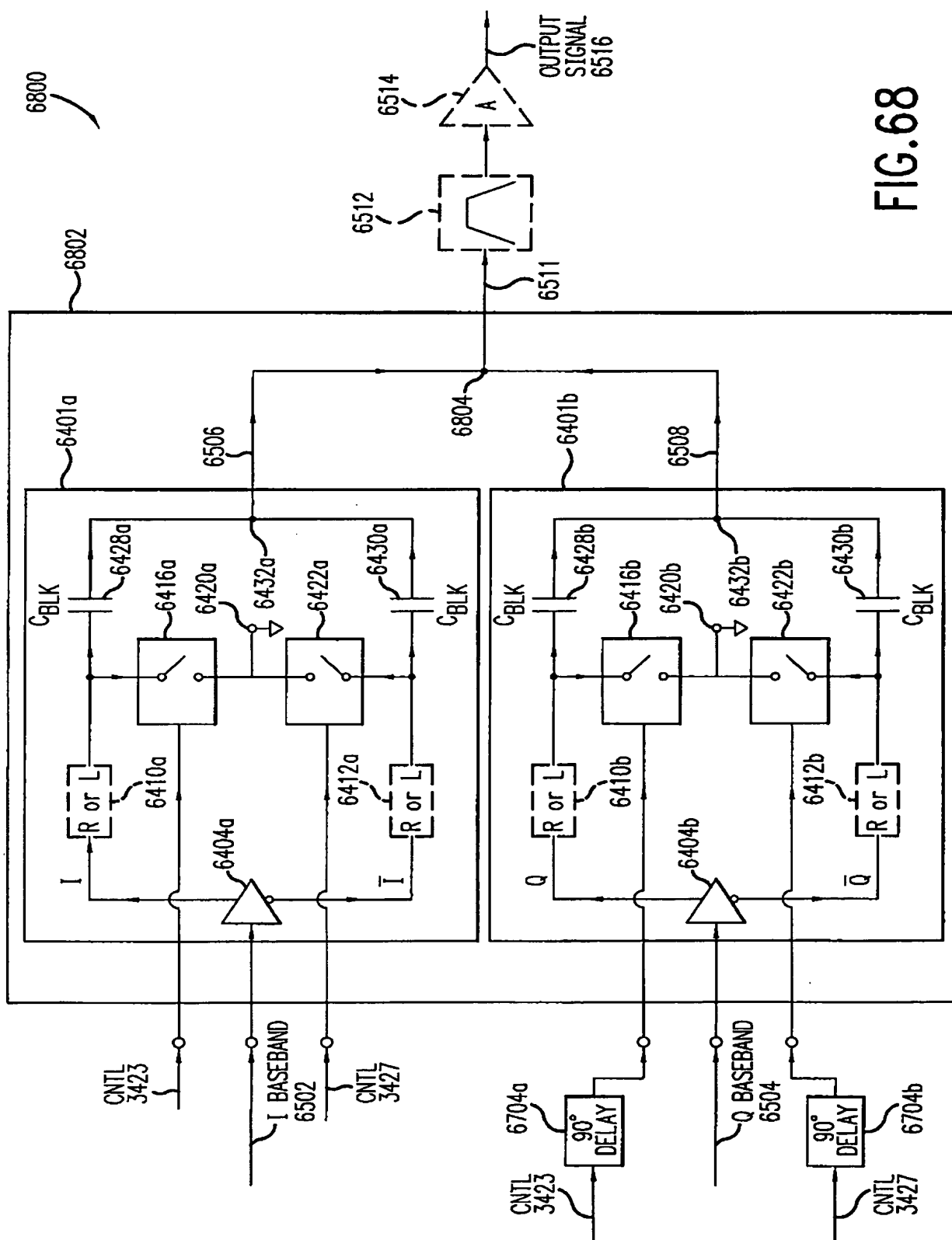


FIG. 68

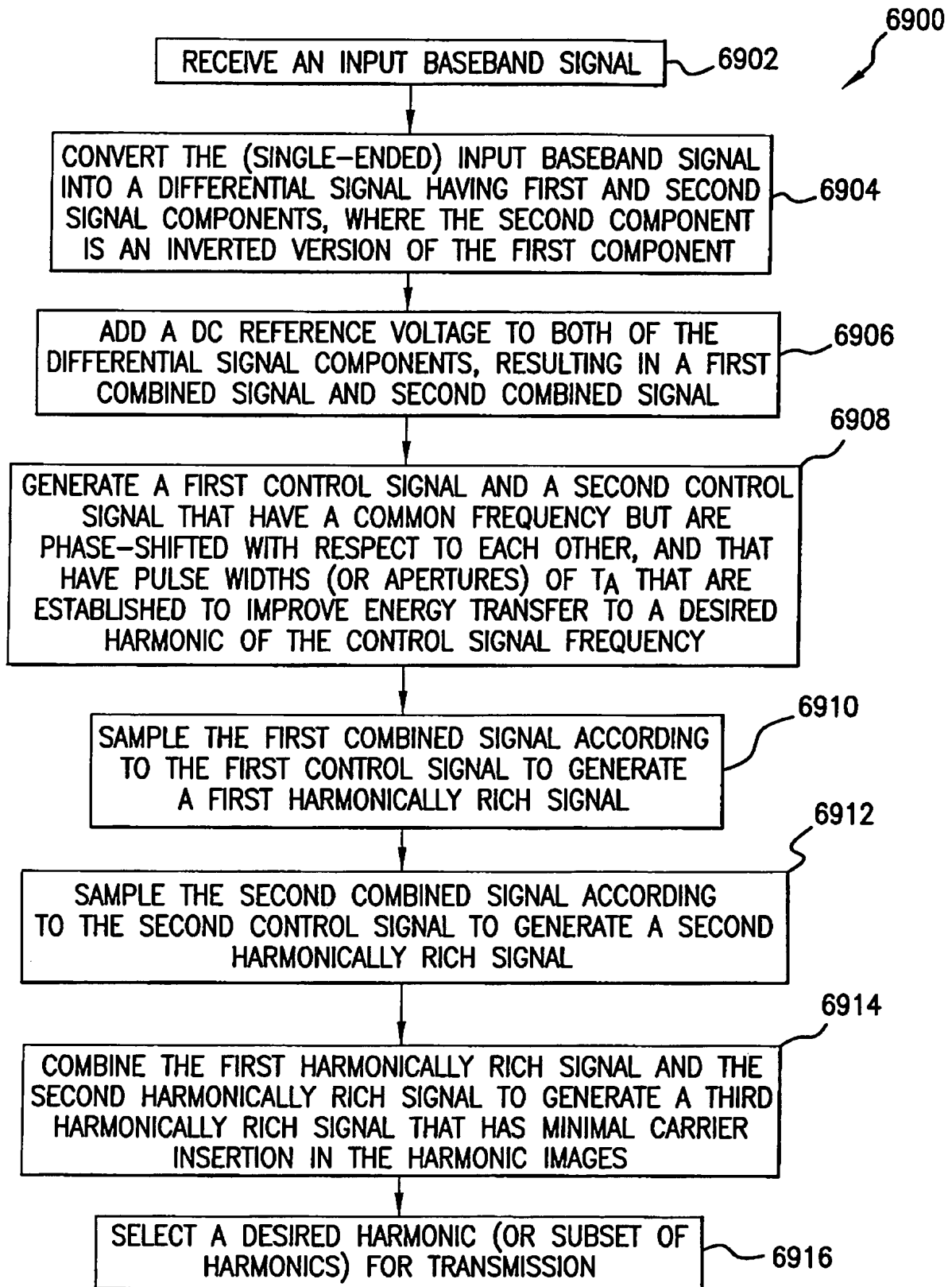


FIG.69

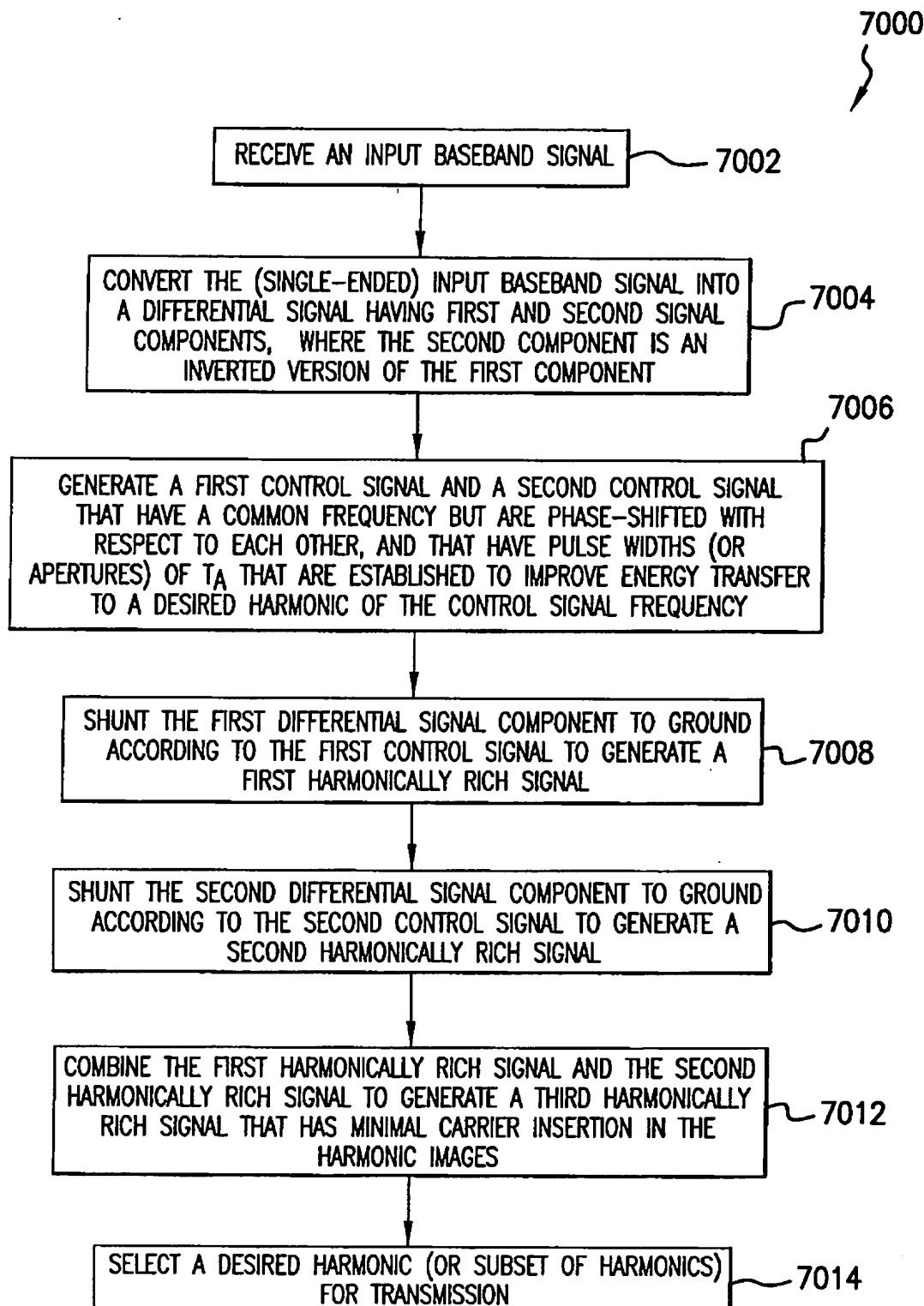


FIG.70

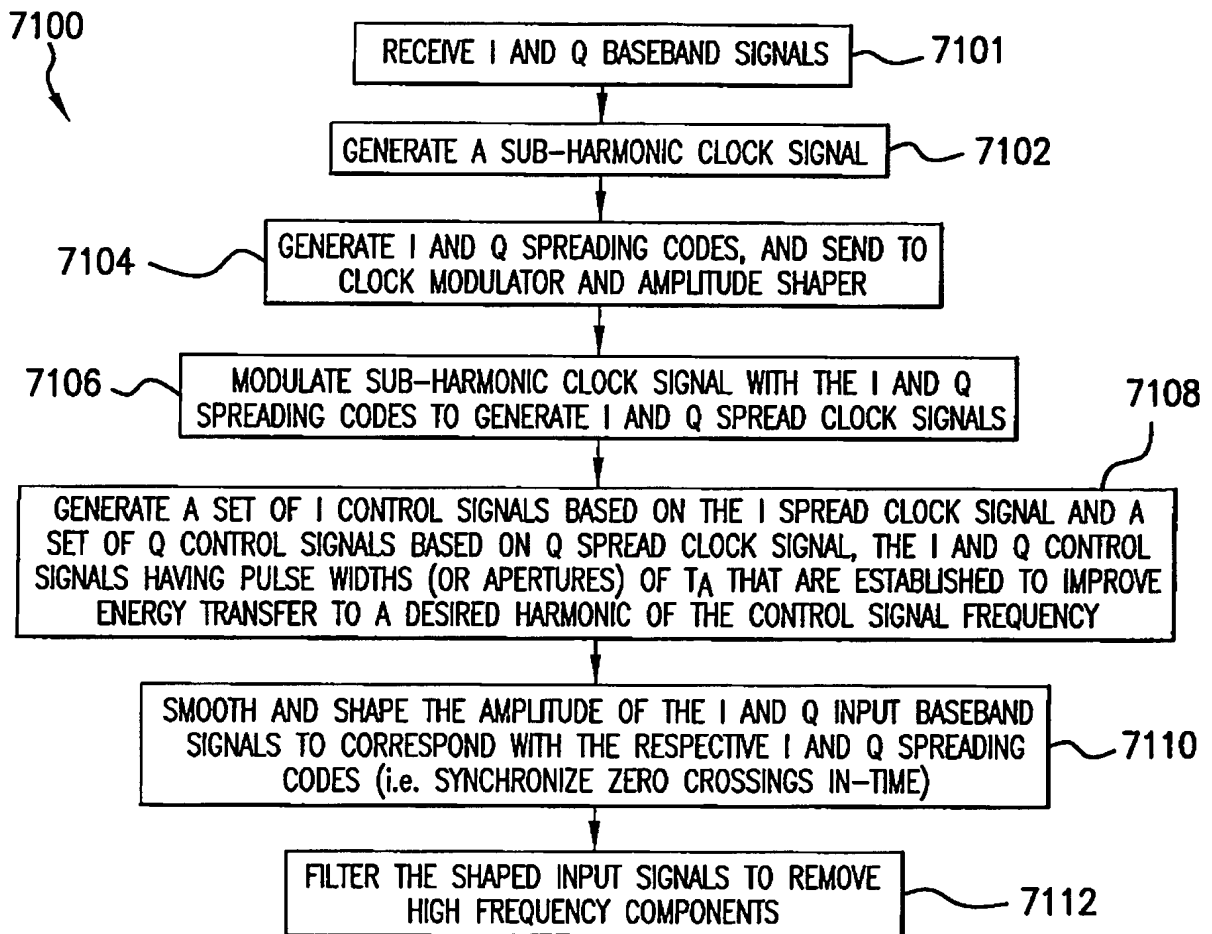


FIG.71A

7100  
(CONTINUED)

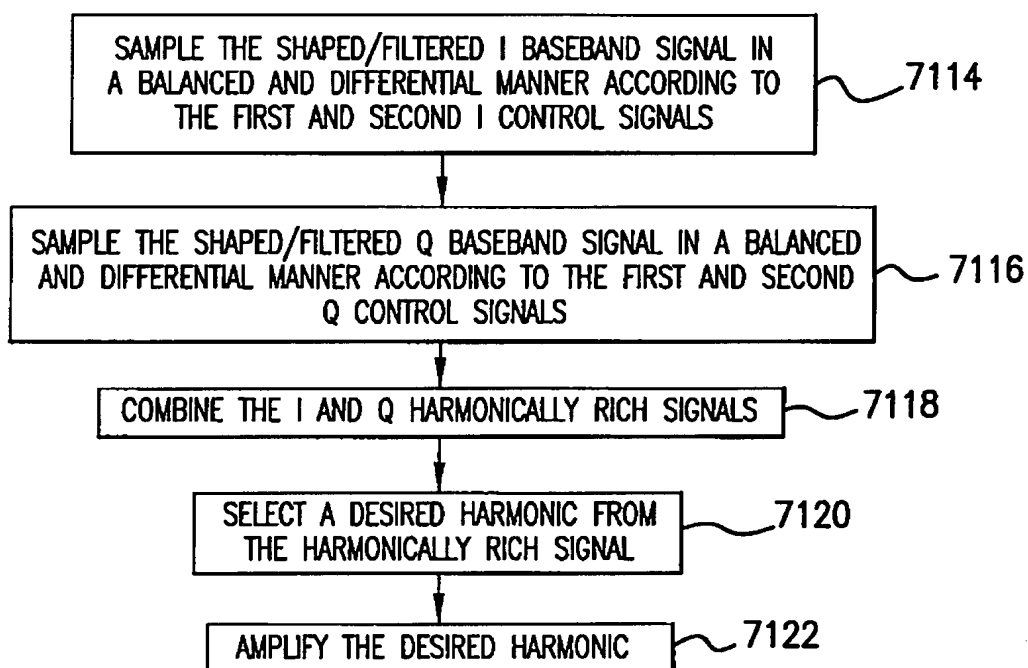


FIG.71B

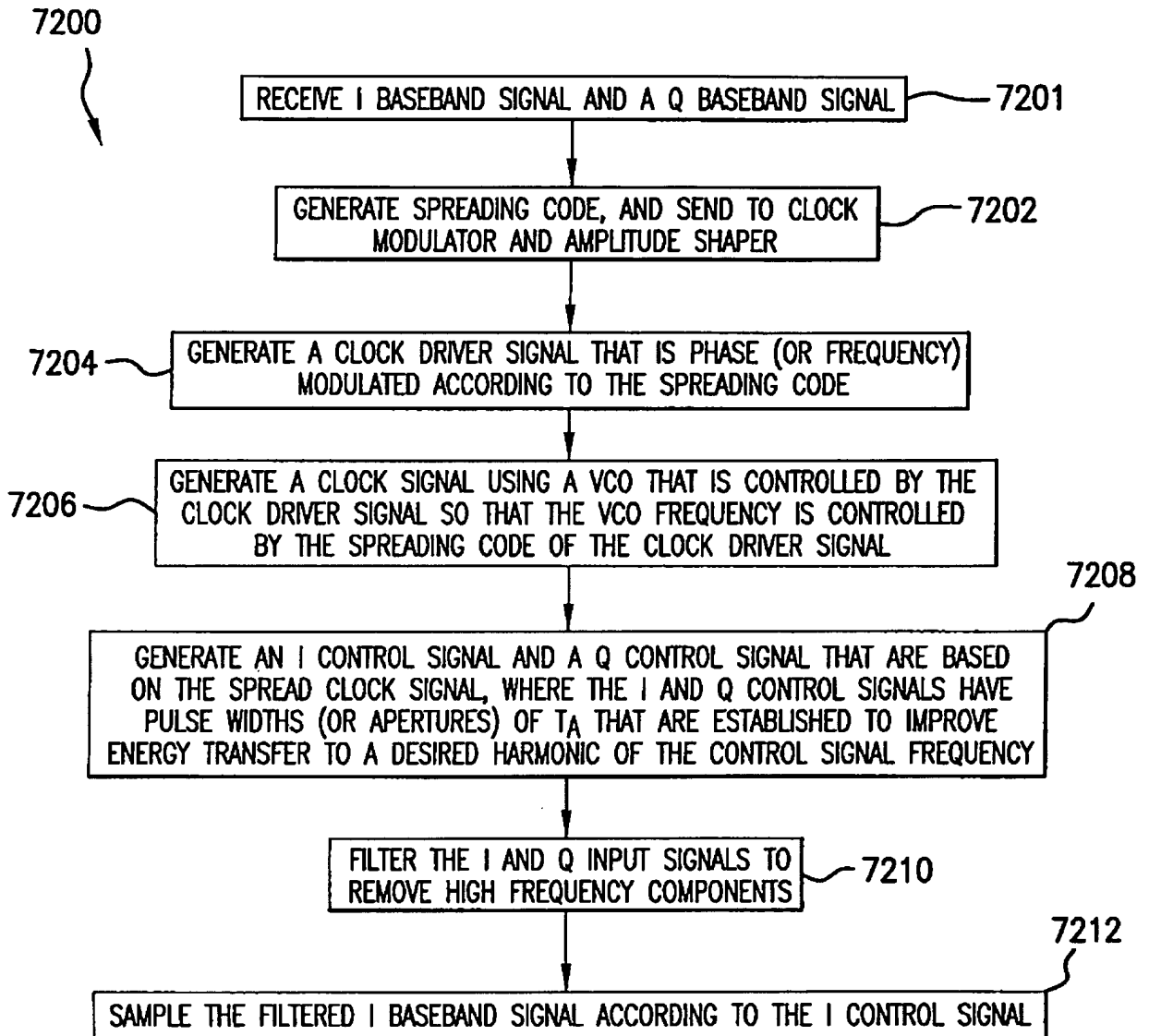


FIG.72A

7200  
(CONTINUED)

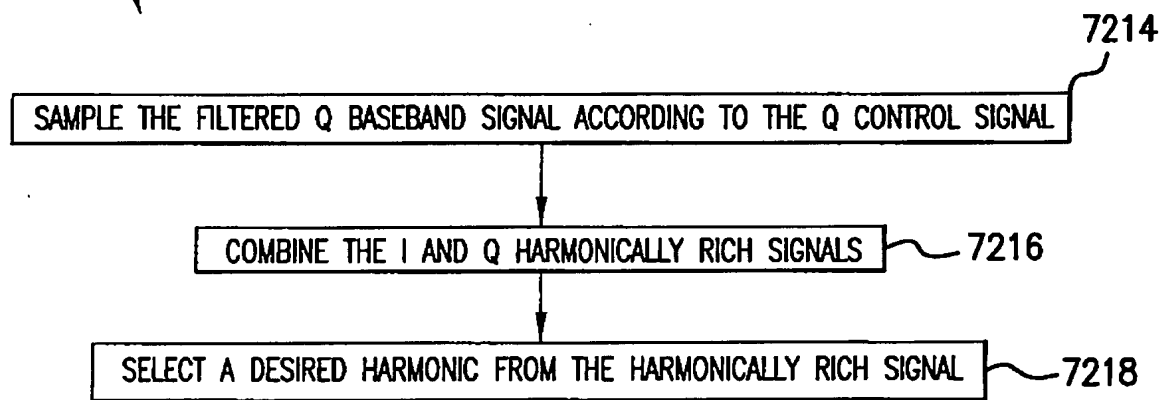
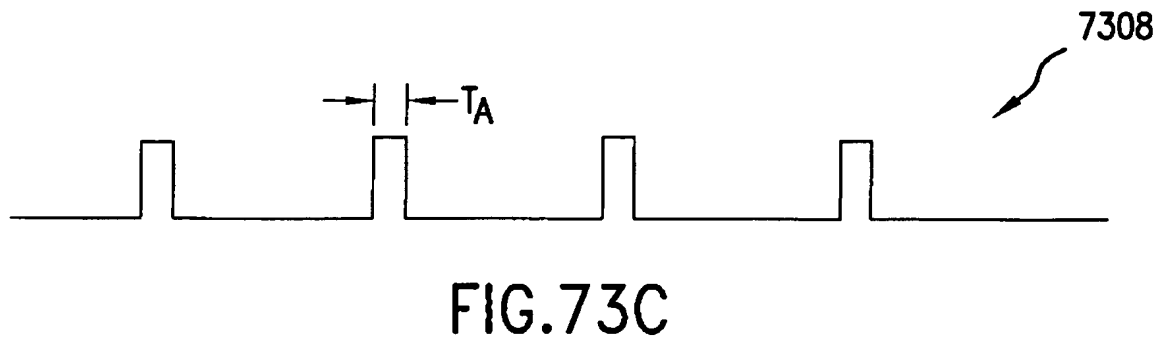
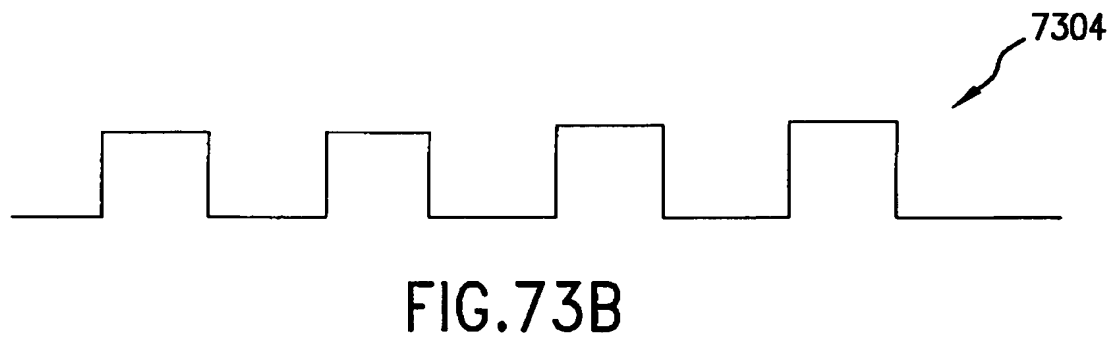
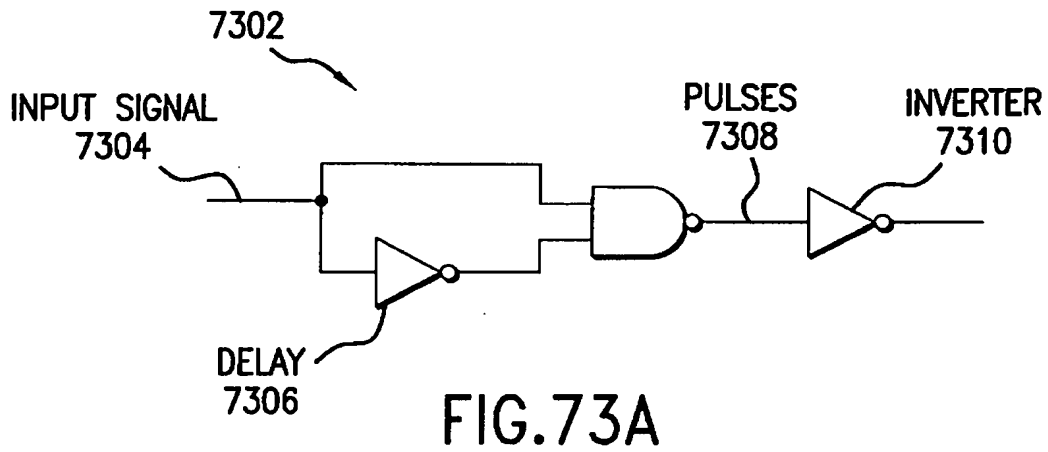


FIG.72B



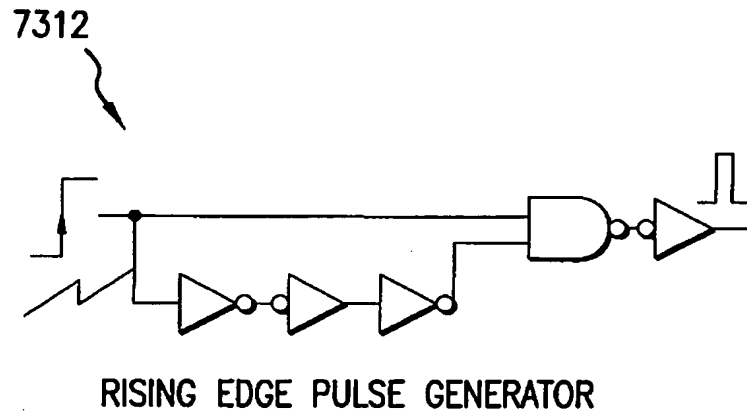


FIG.73D

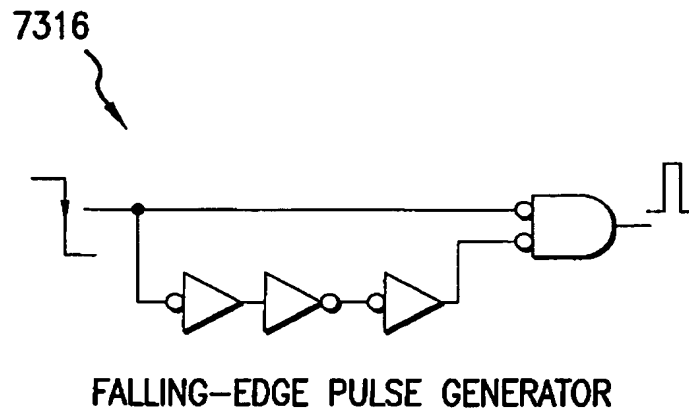
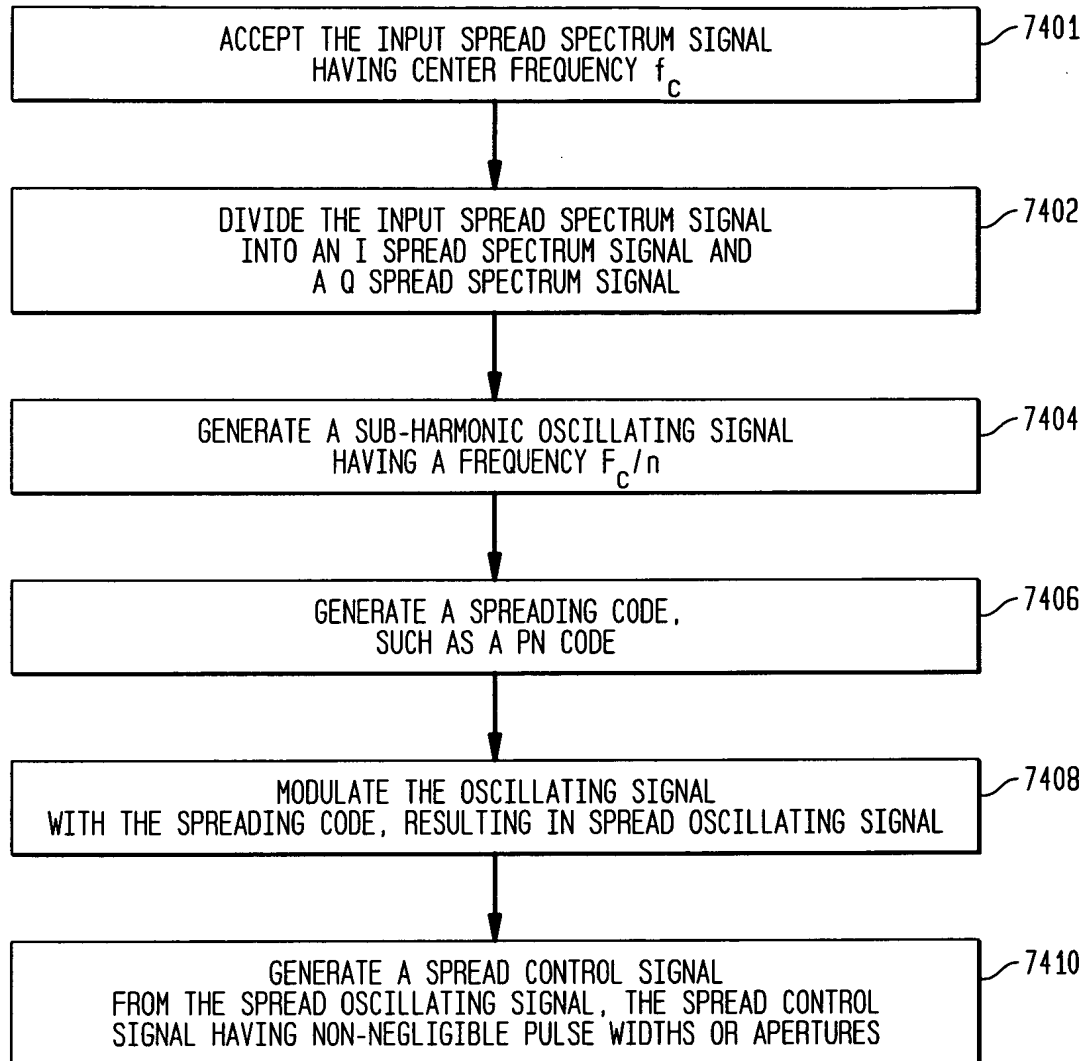


FIG.73E

7400

FIG. 74A



7400  
(CONT.)

**FIG. 74B**

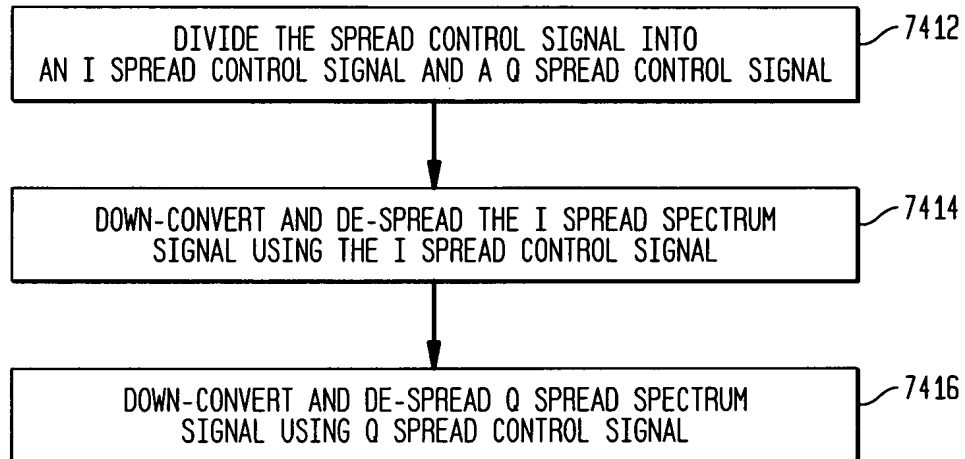


FIG. 75

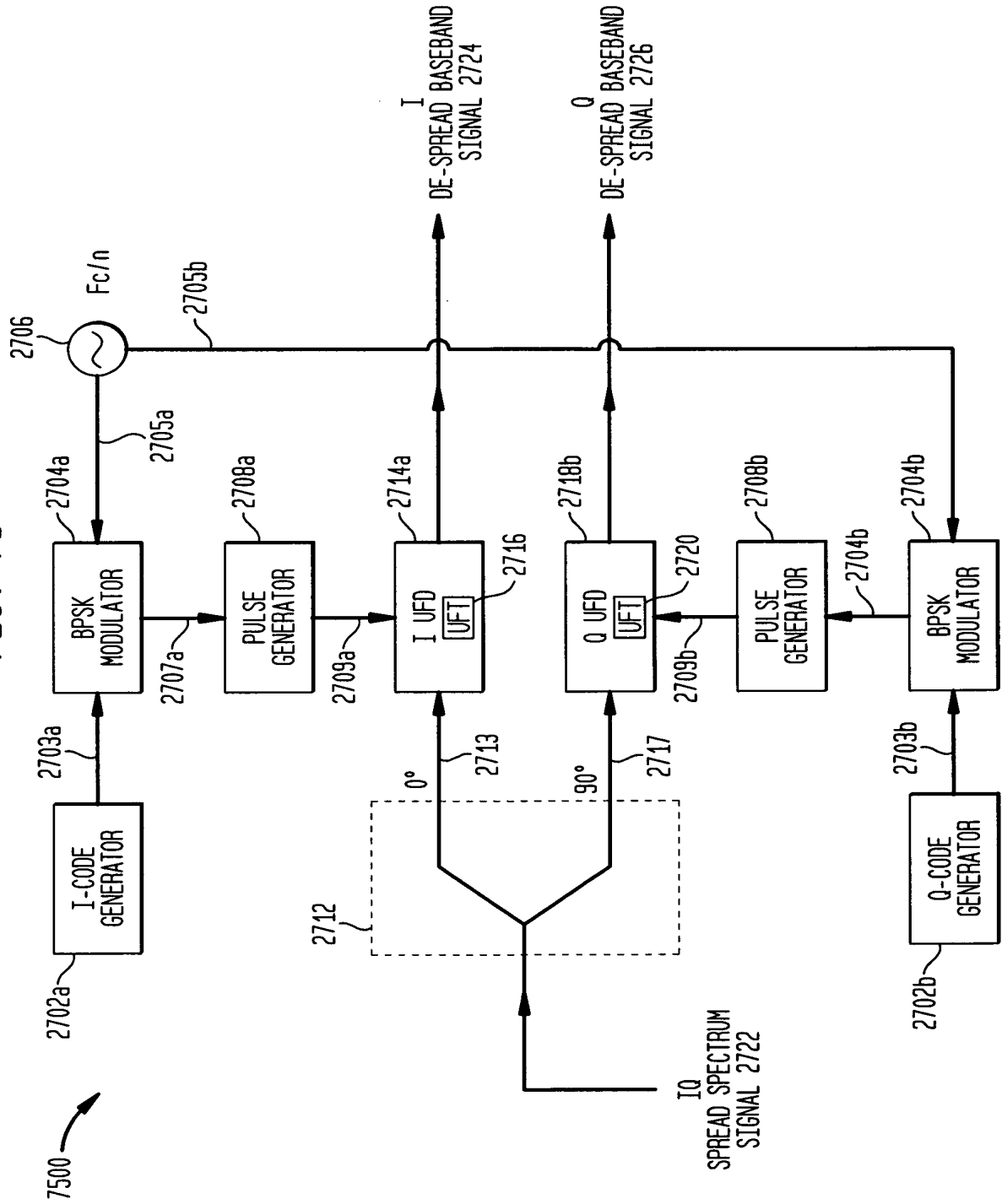
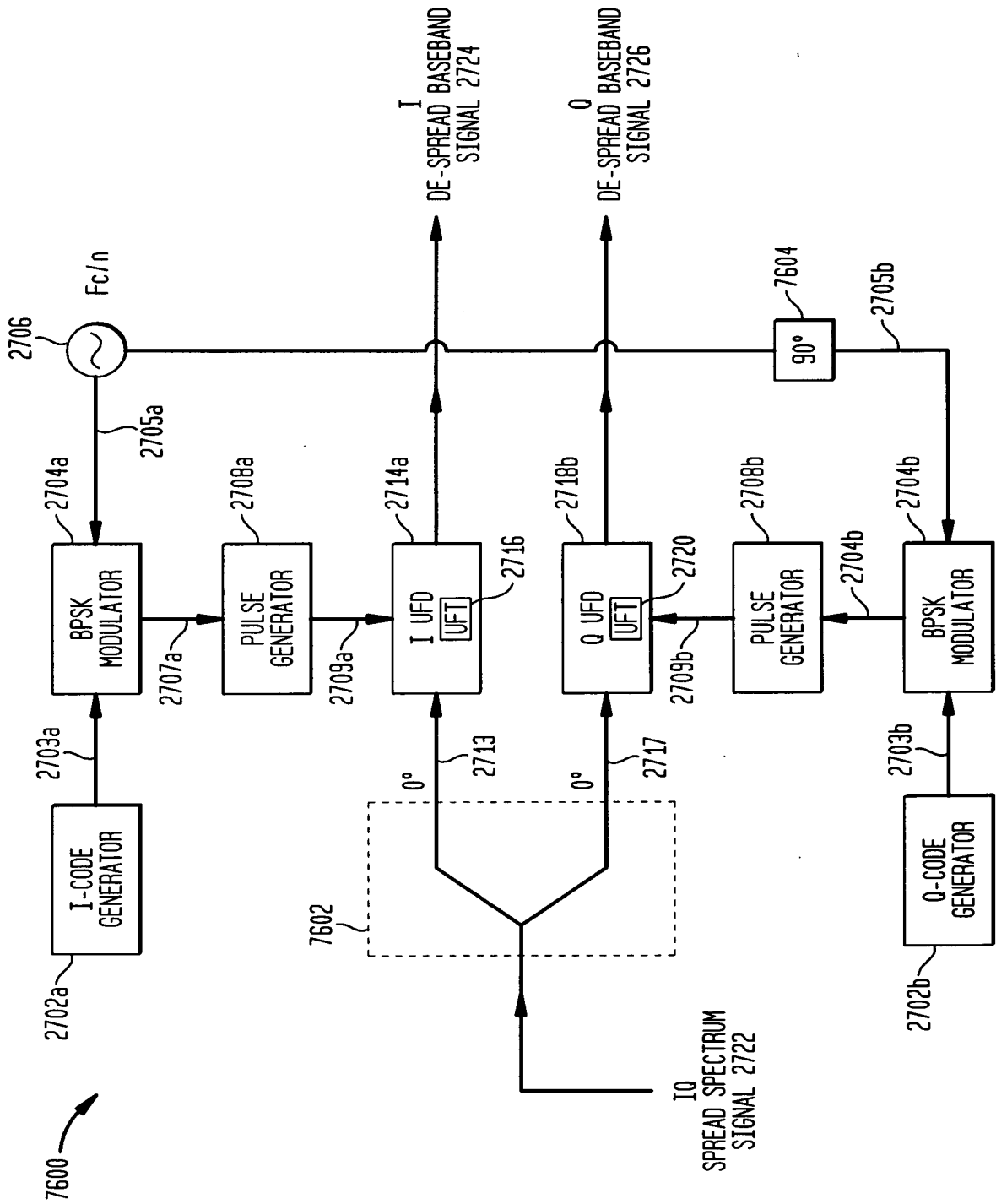
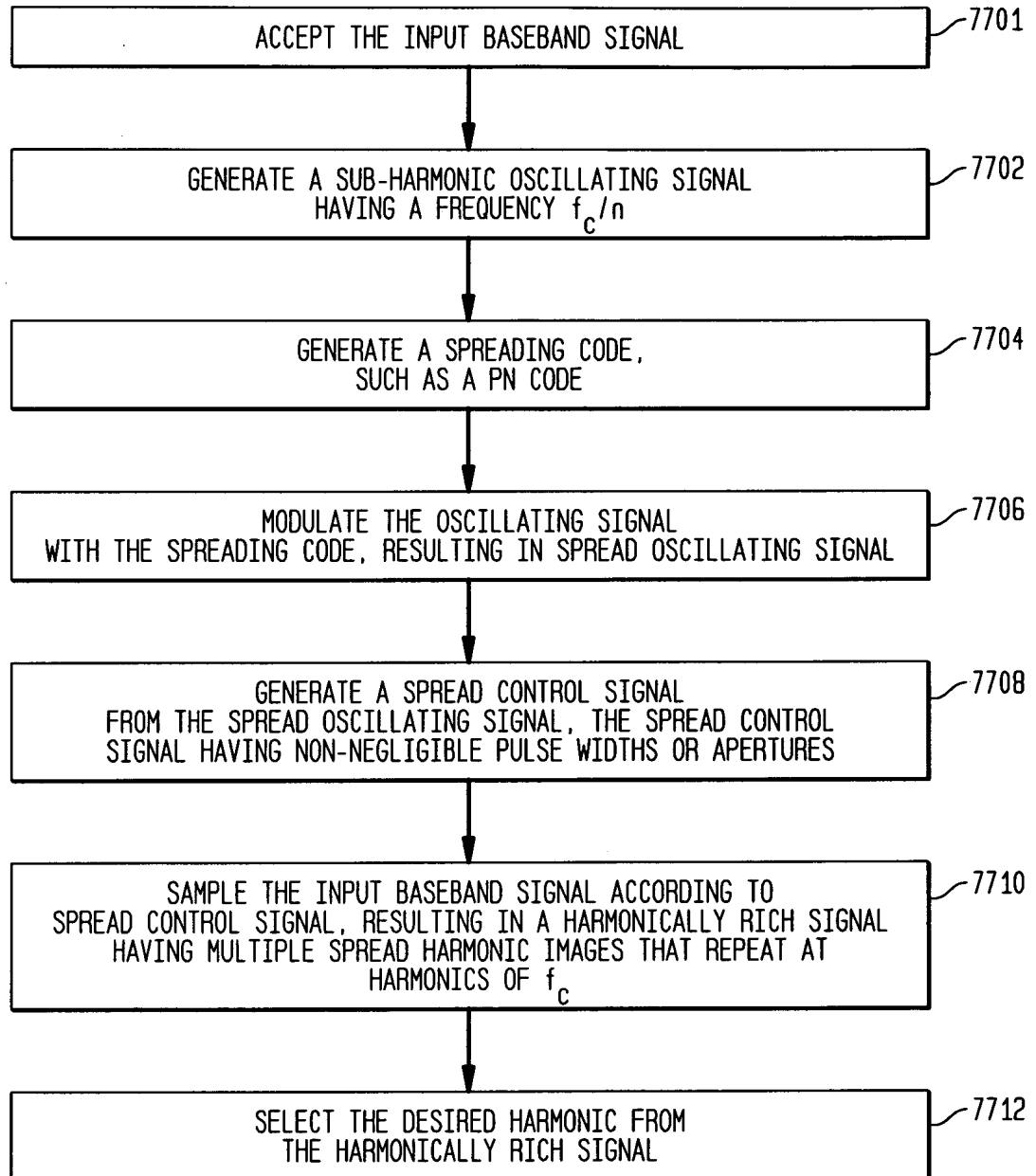


FIG. 76



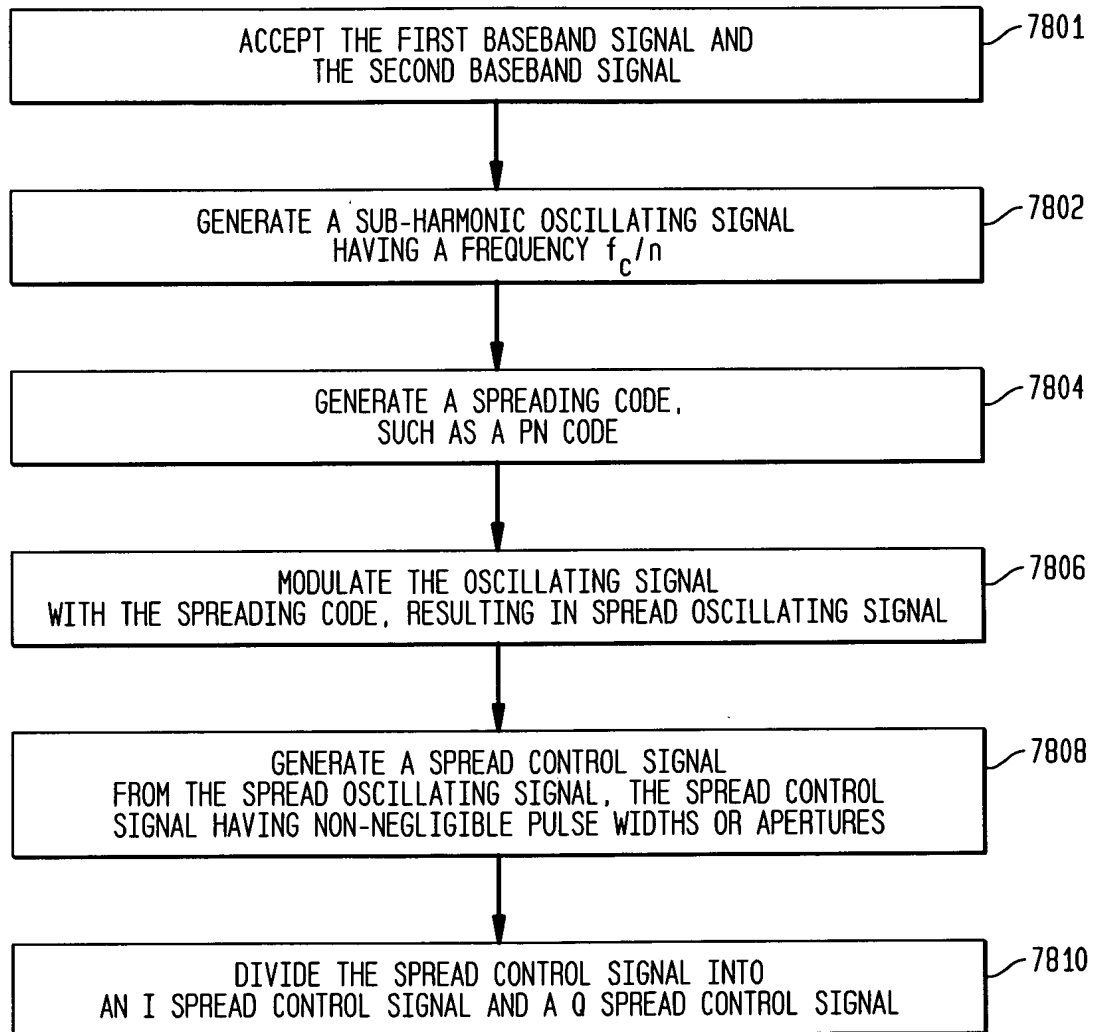
7700 ↗

**FIG. 77**



7800

FIG. 78A



7800  
(CONT.)

**FIG. 78B**

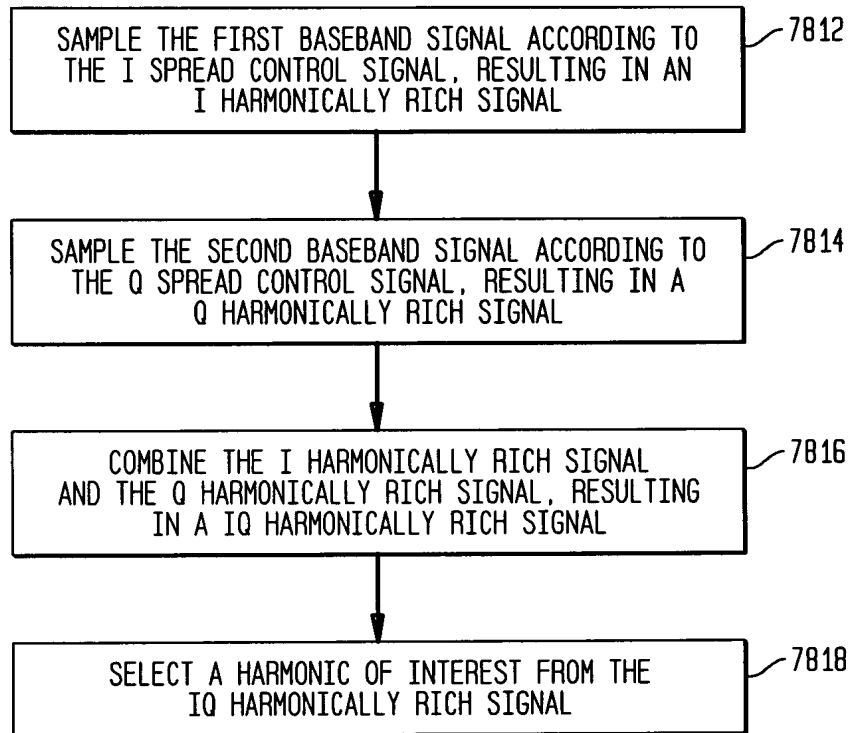


FIG. 79

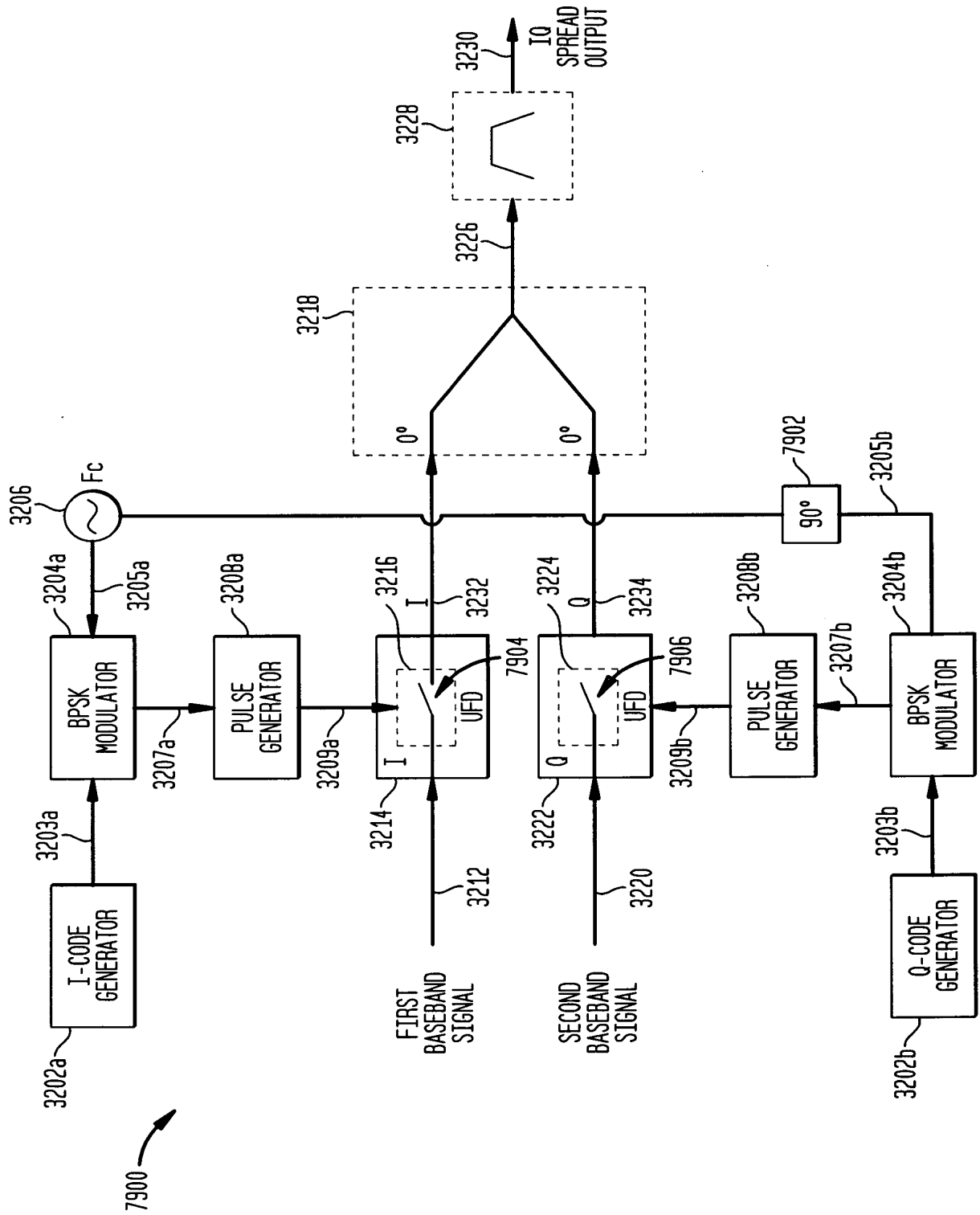
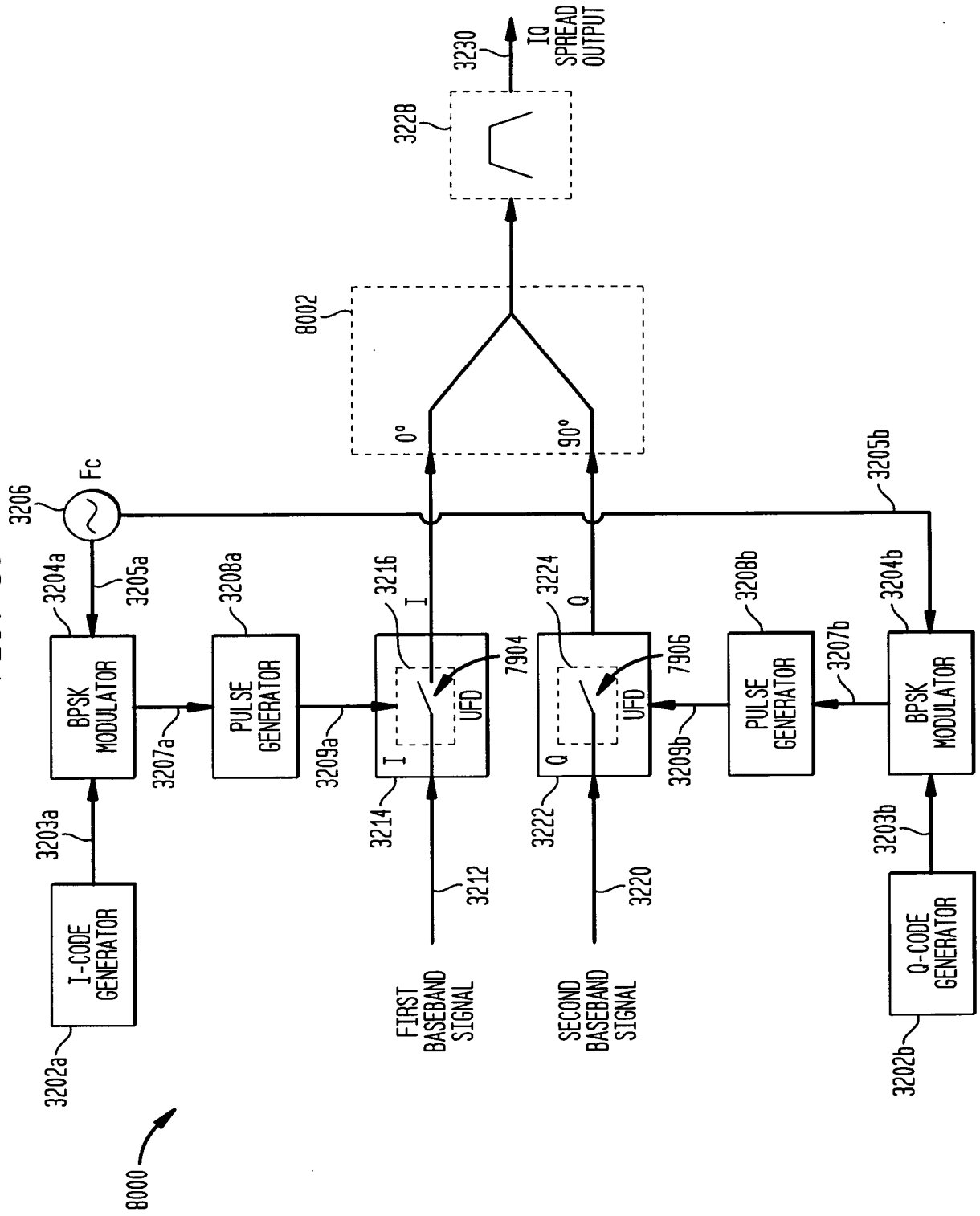
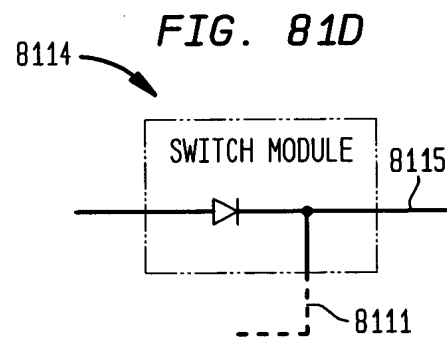
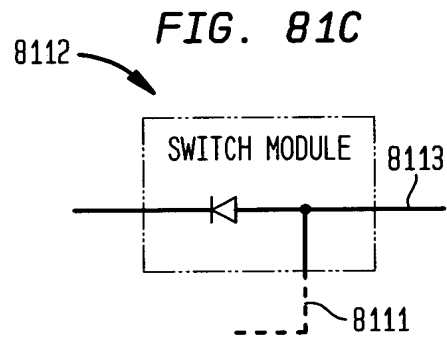
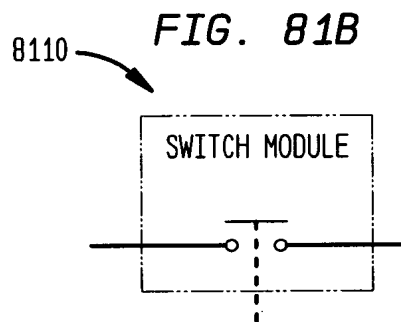
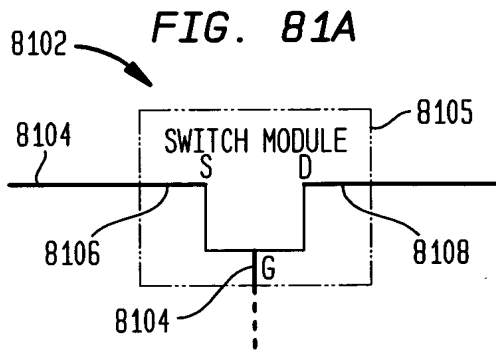
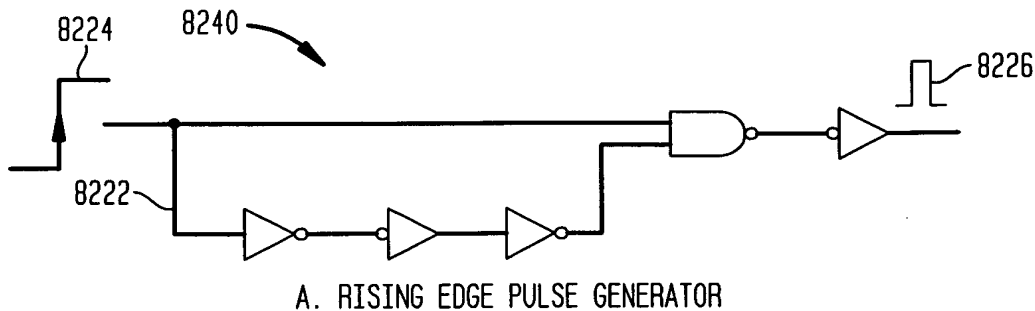


FIG. 80

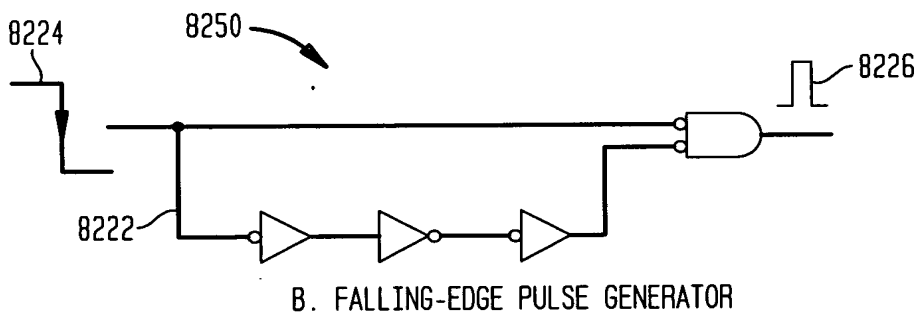




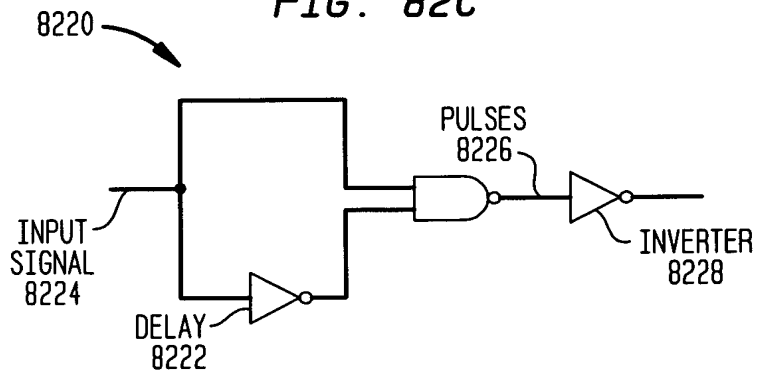
**FIG. 82A**



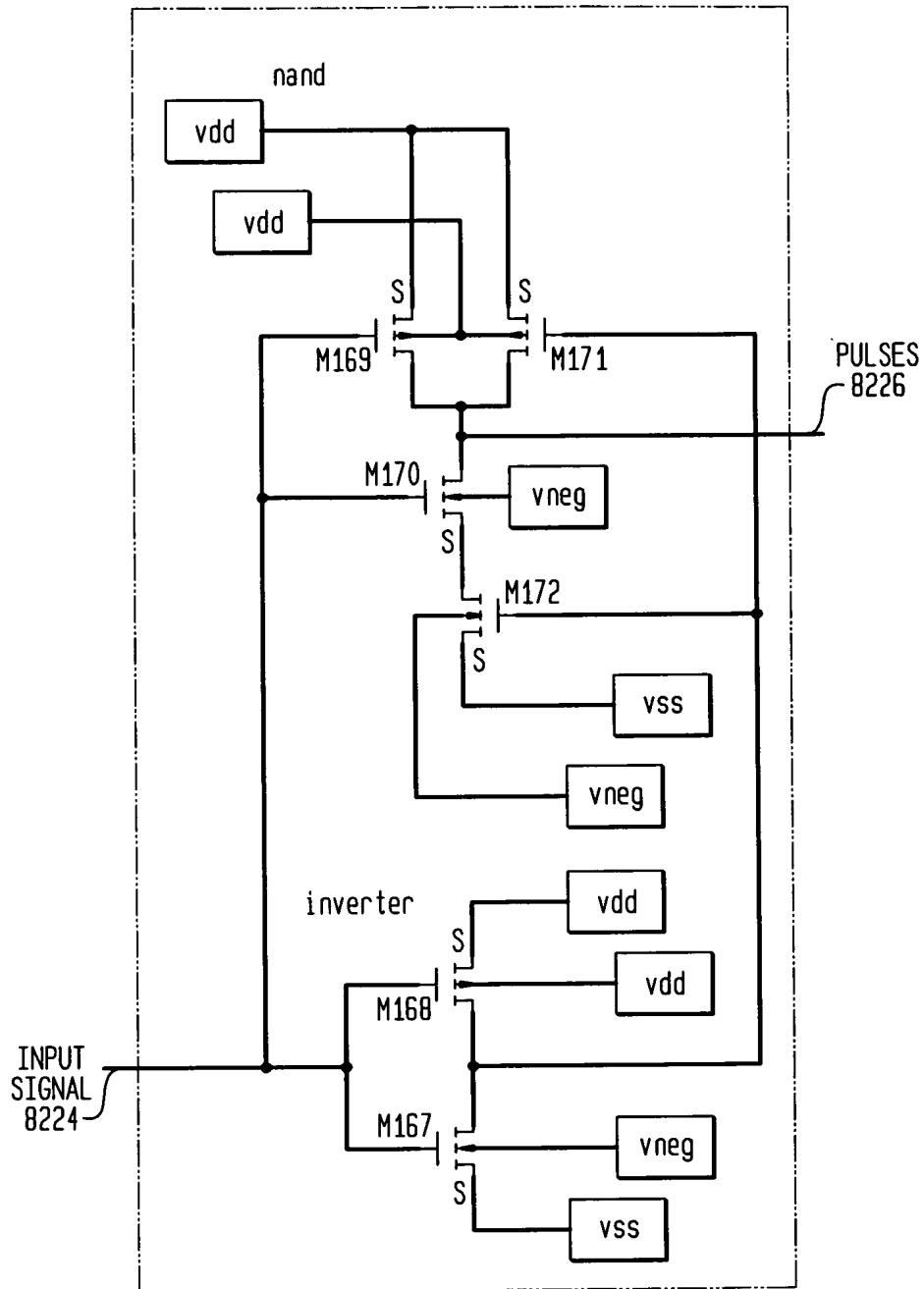
**FIG. 82B**



**FIG. 82C**



**FIG. 82D**



**FIG. 82E**

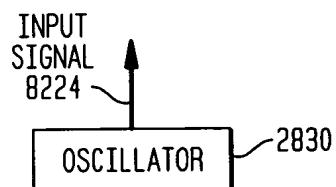
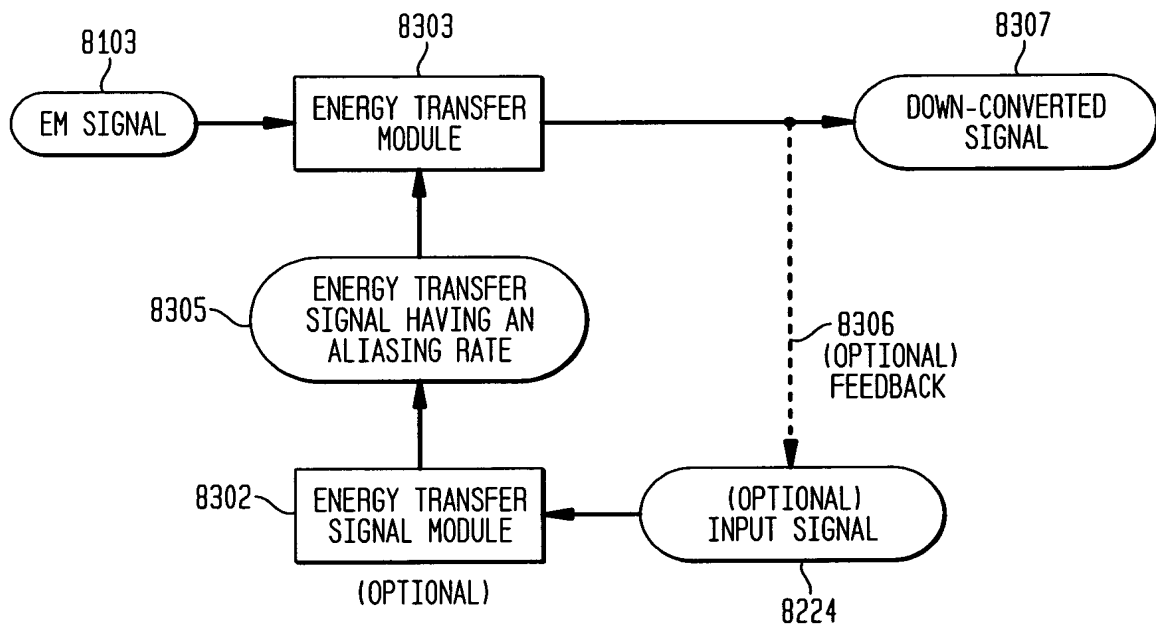
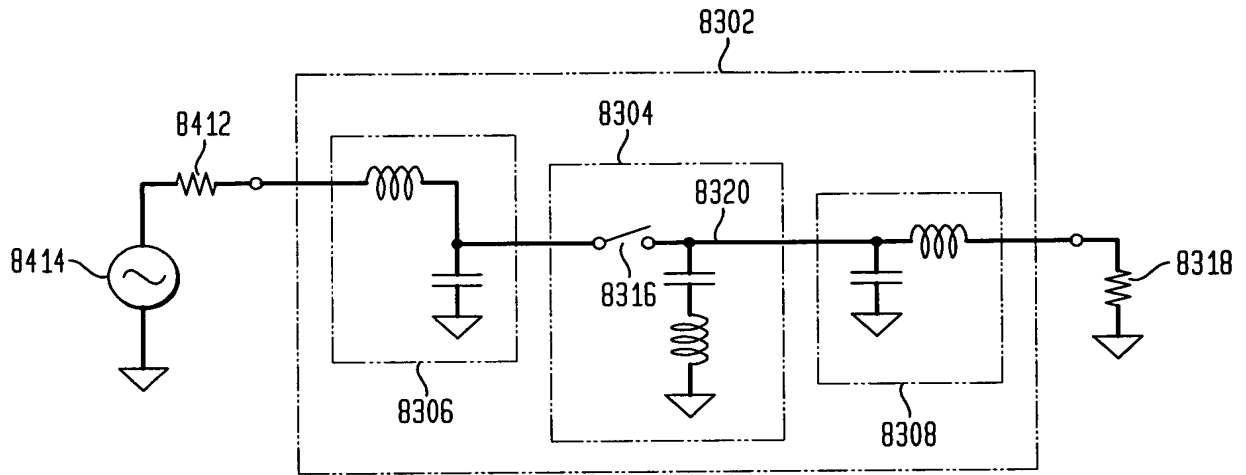


FIG. 83



**FIG. 84**

IMPEDANCE MATCHED ALIASING MODULE



**FIG. 85A**

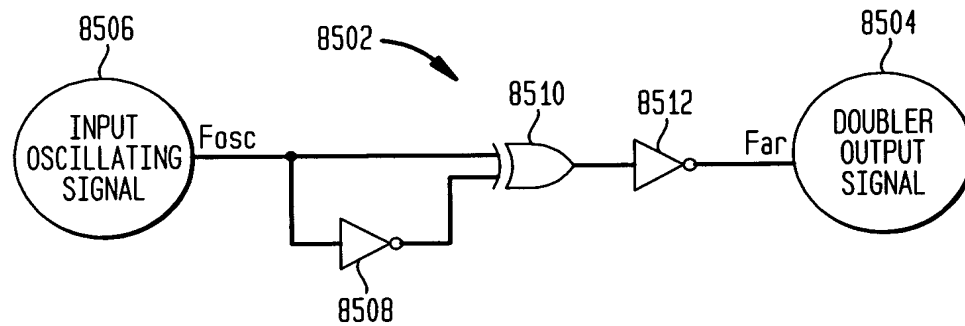


FIG. 85B

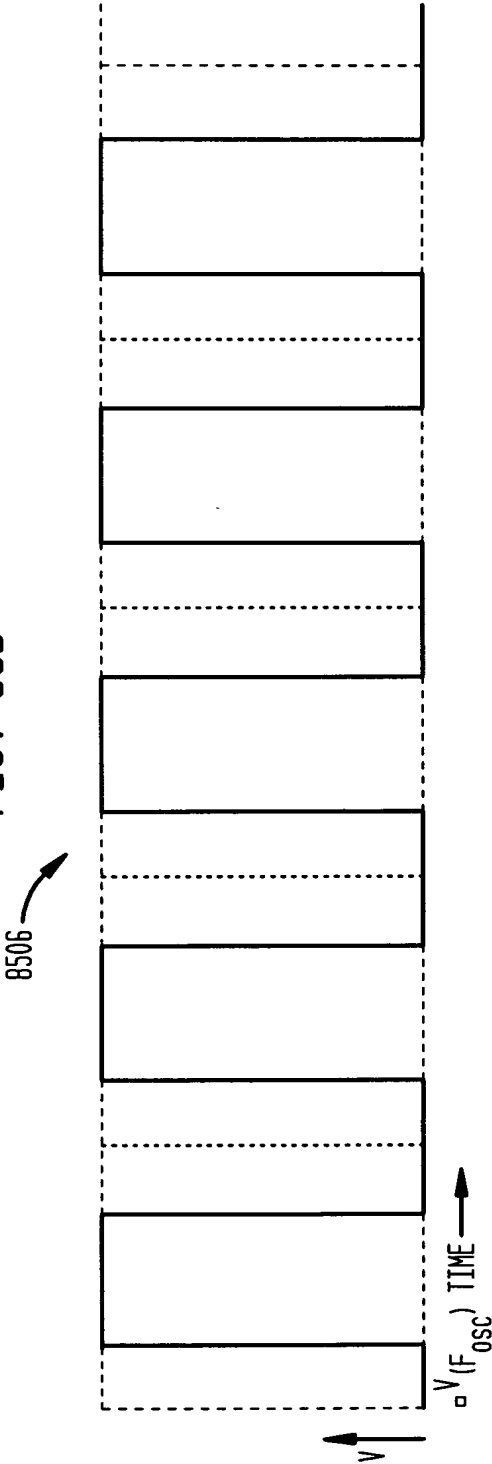
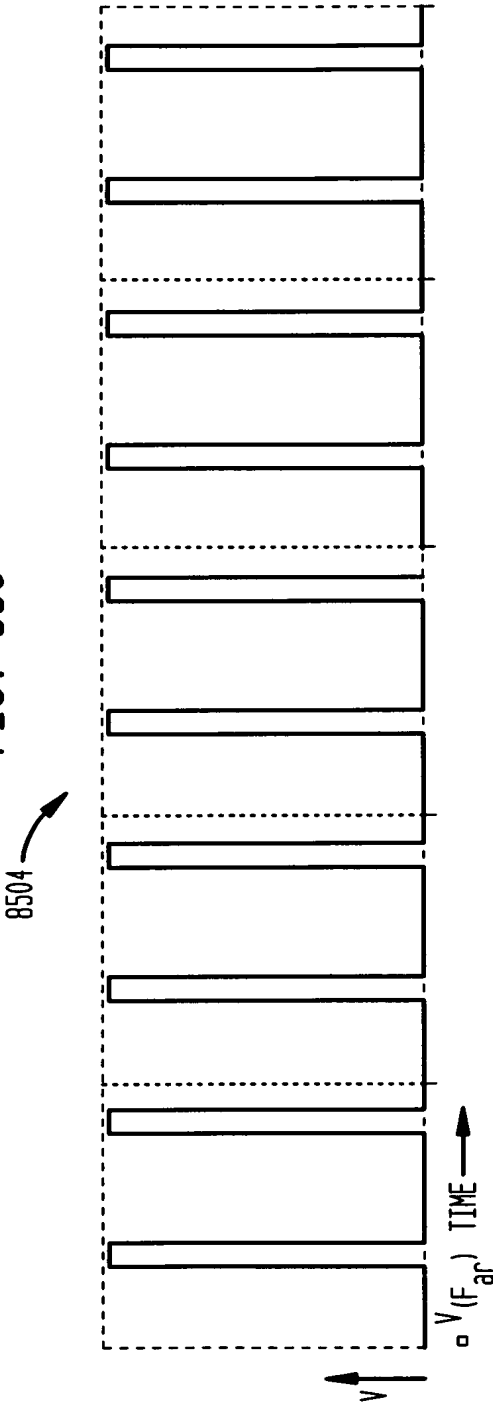
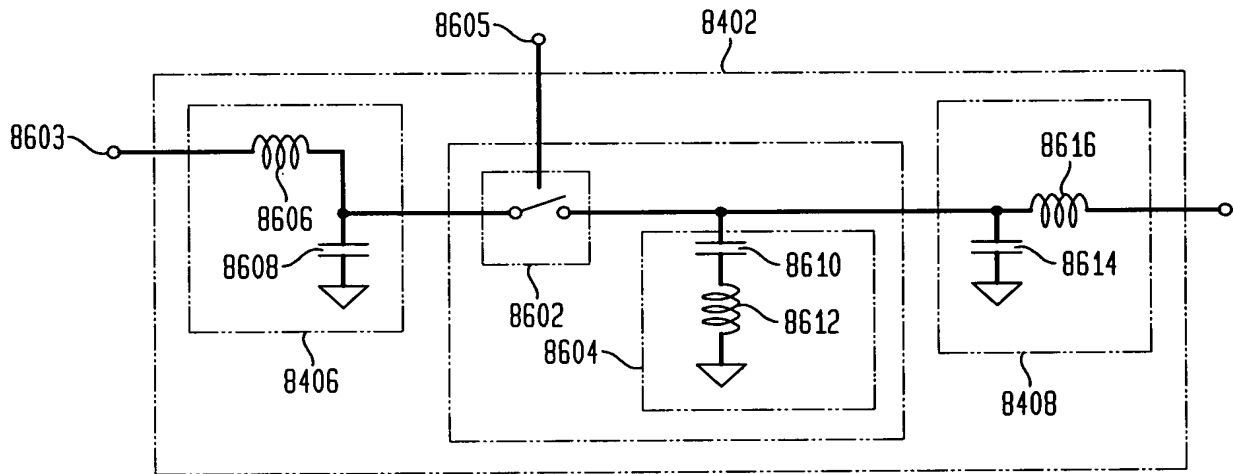


FIG. 85C

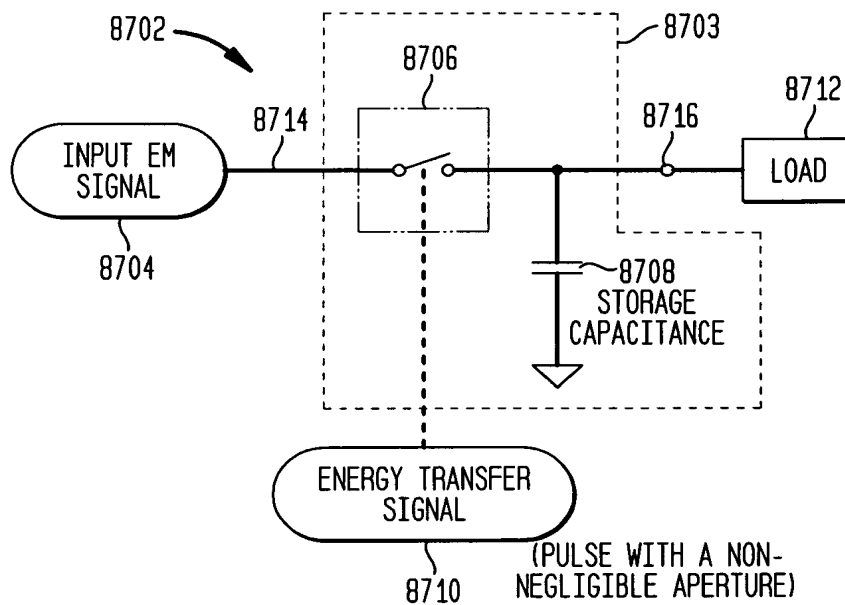


**FIG. 86**

**ALIASING MODULE**



**FIG. 87A**



**FIG. 87**

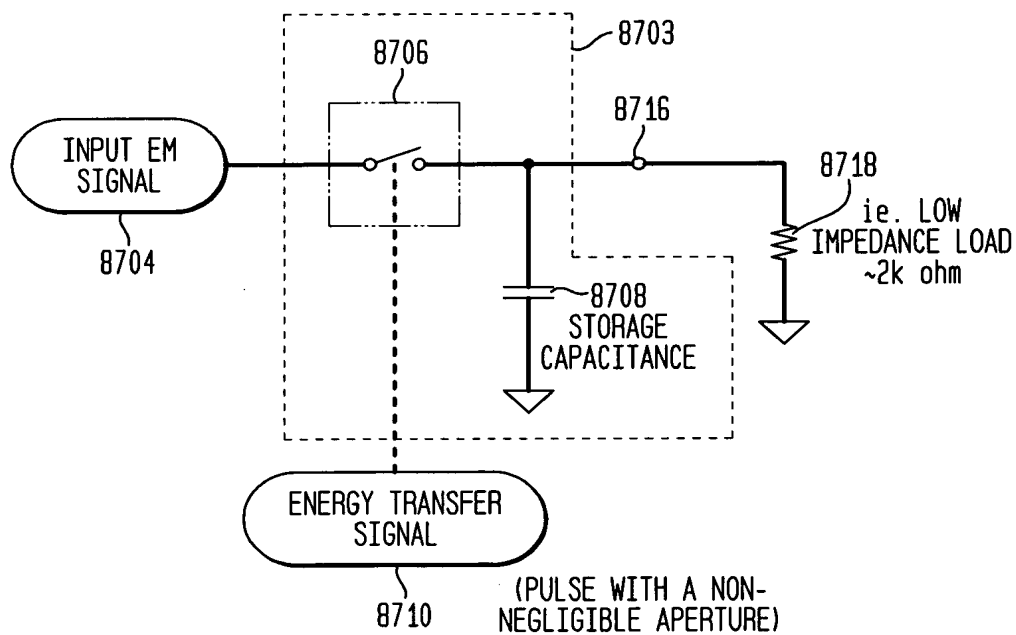


FIG. 88A

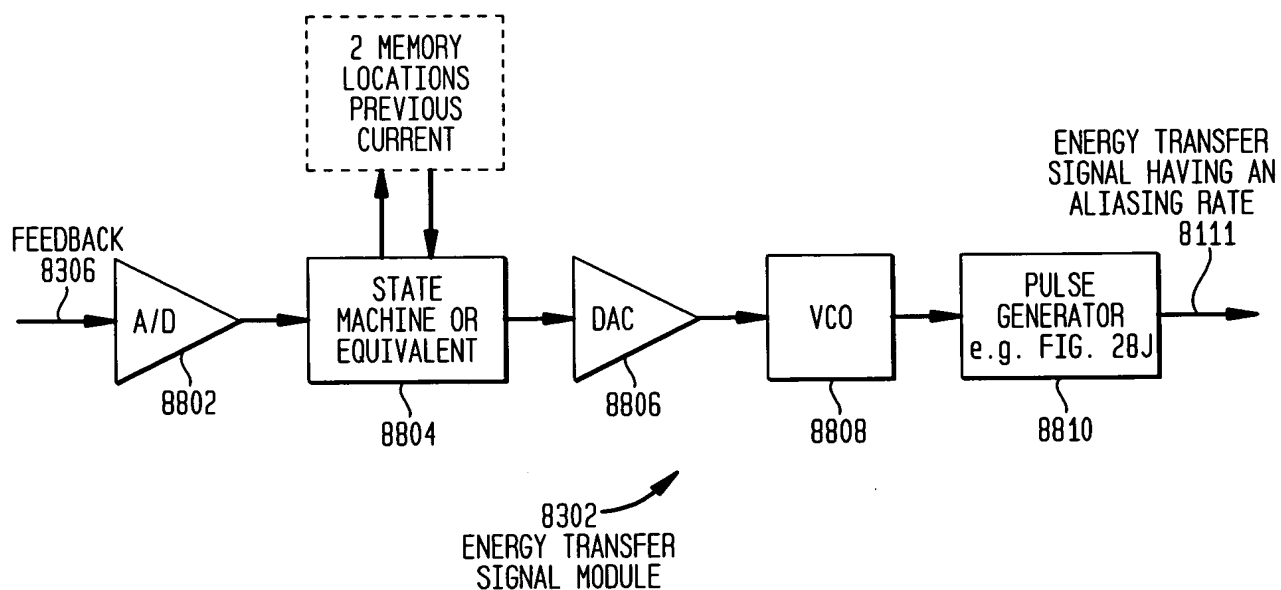
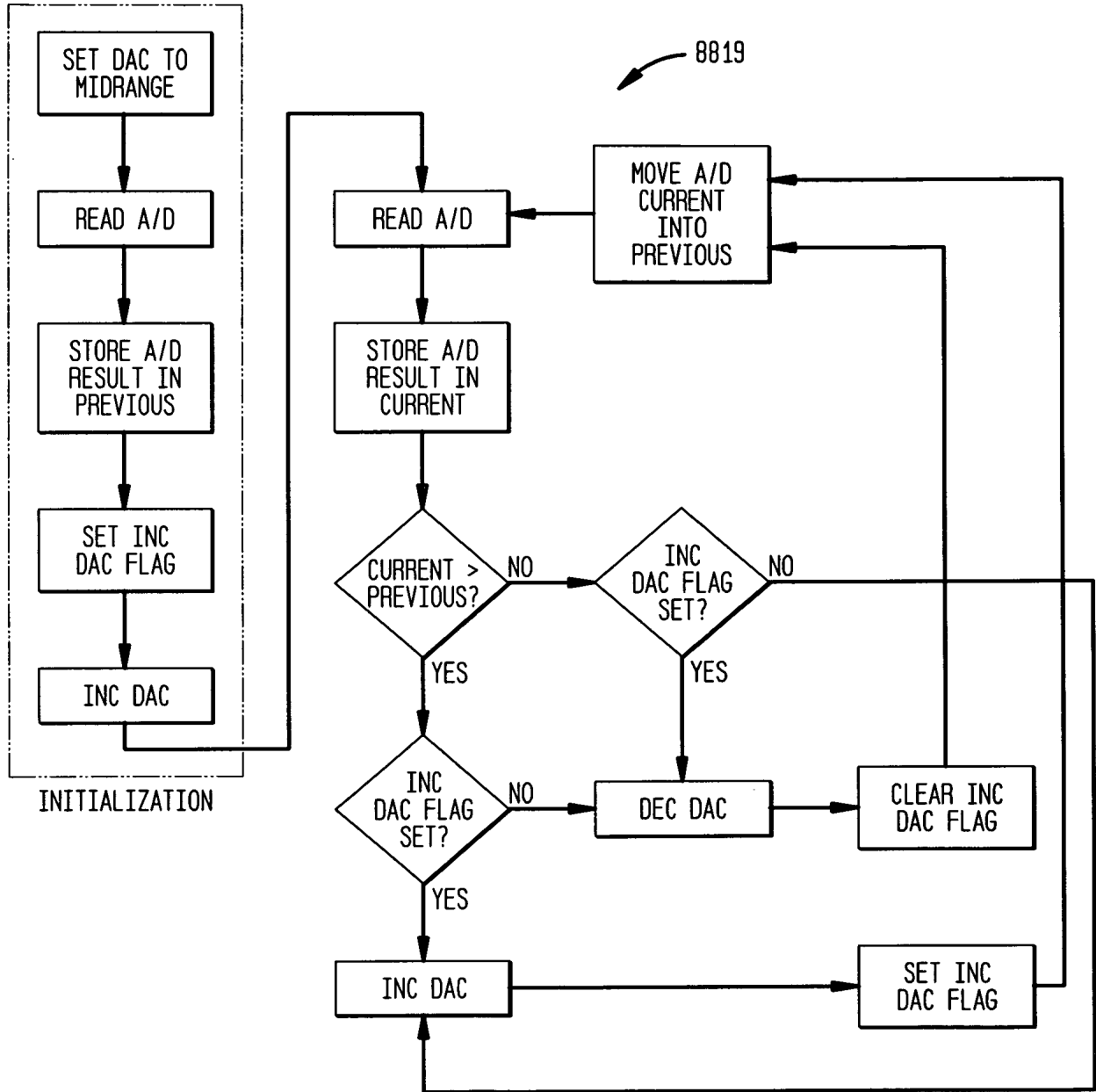
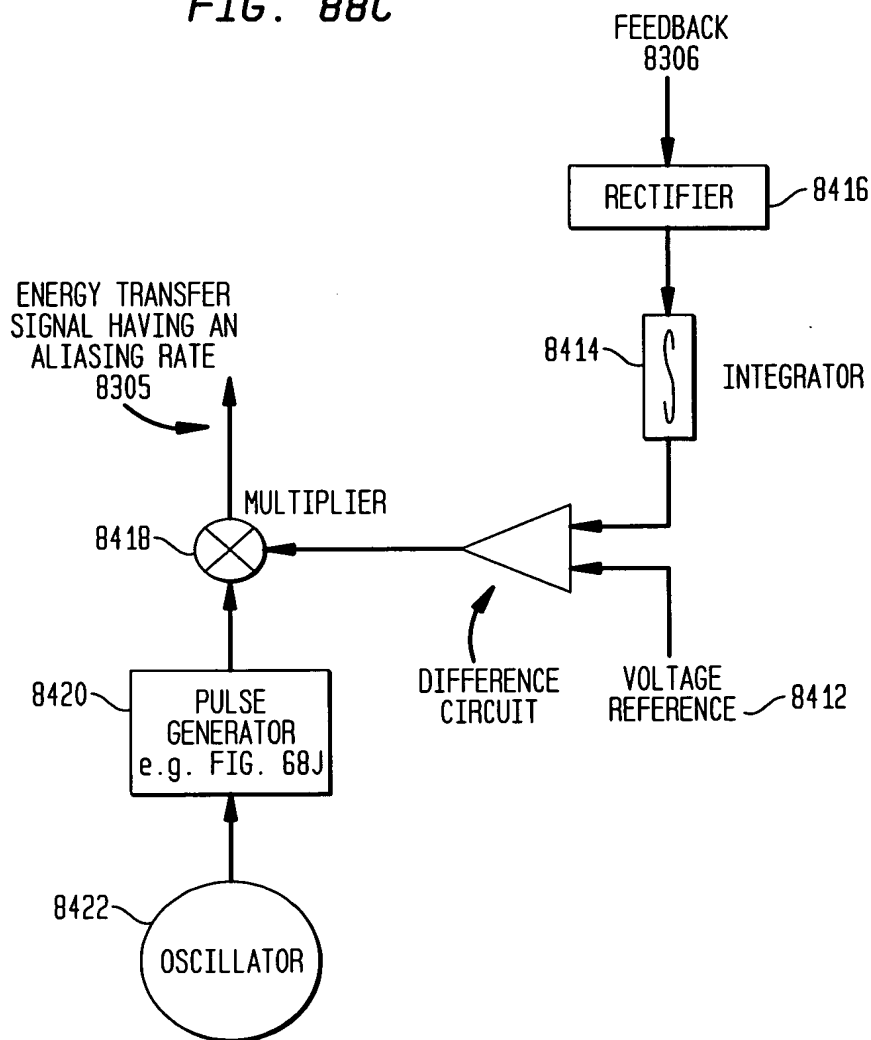


FIG. 88B



STATE MACHINE FLOWCHART

**FIG. 88C**



**ENERGY TRANSFER SIGNAL MODULE 8302**

FIG. 89

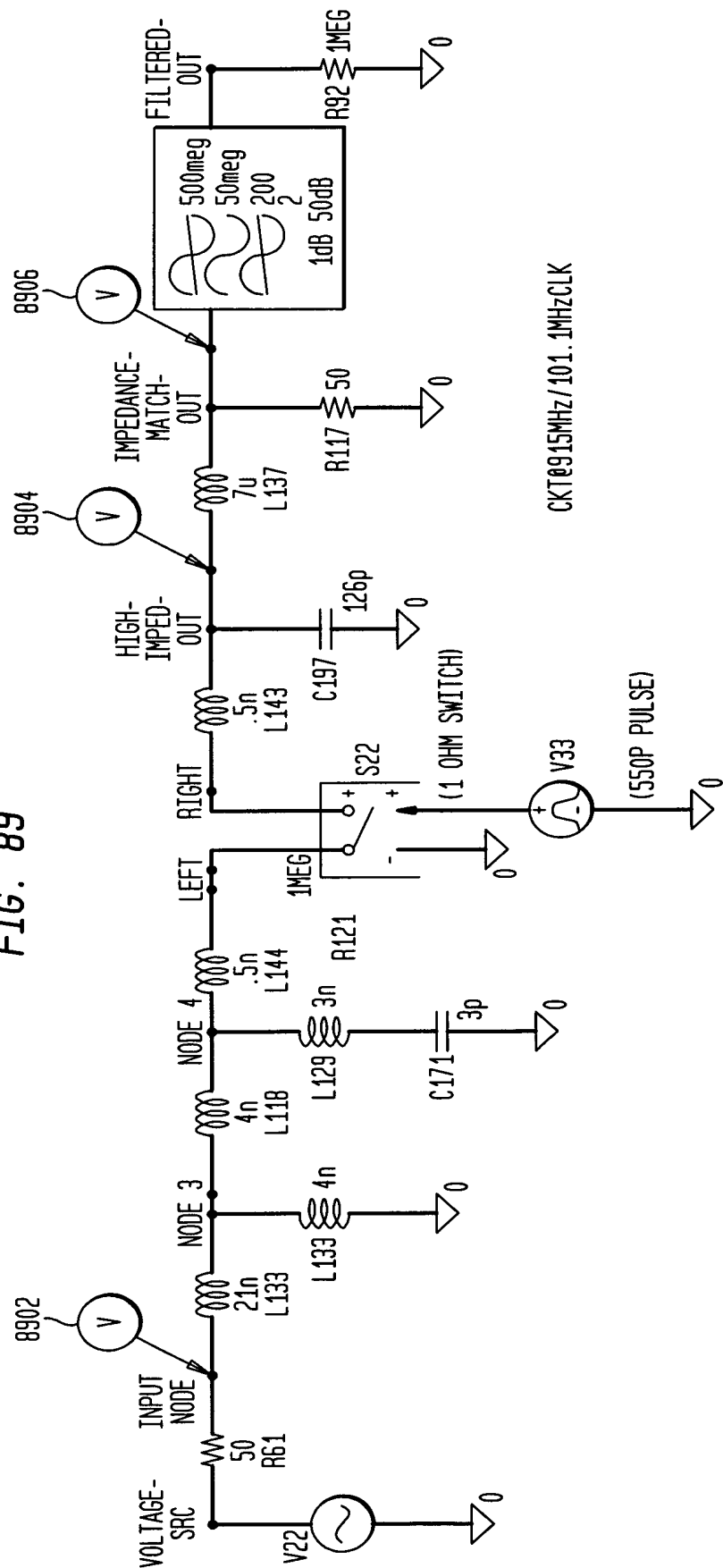


FIG. 90

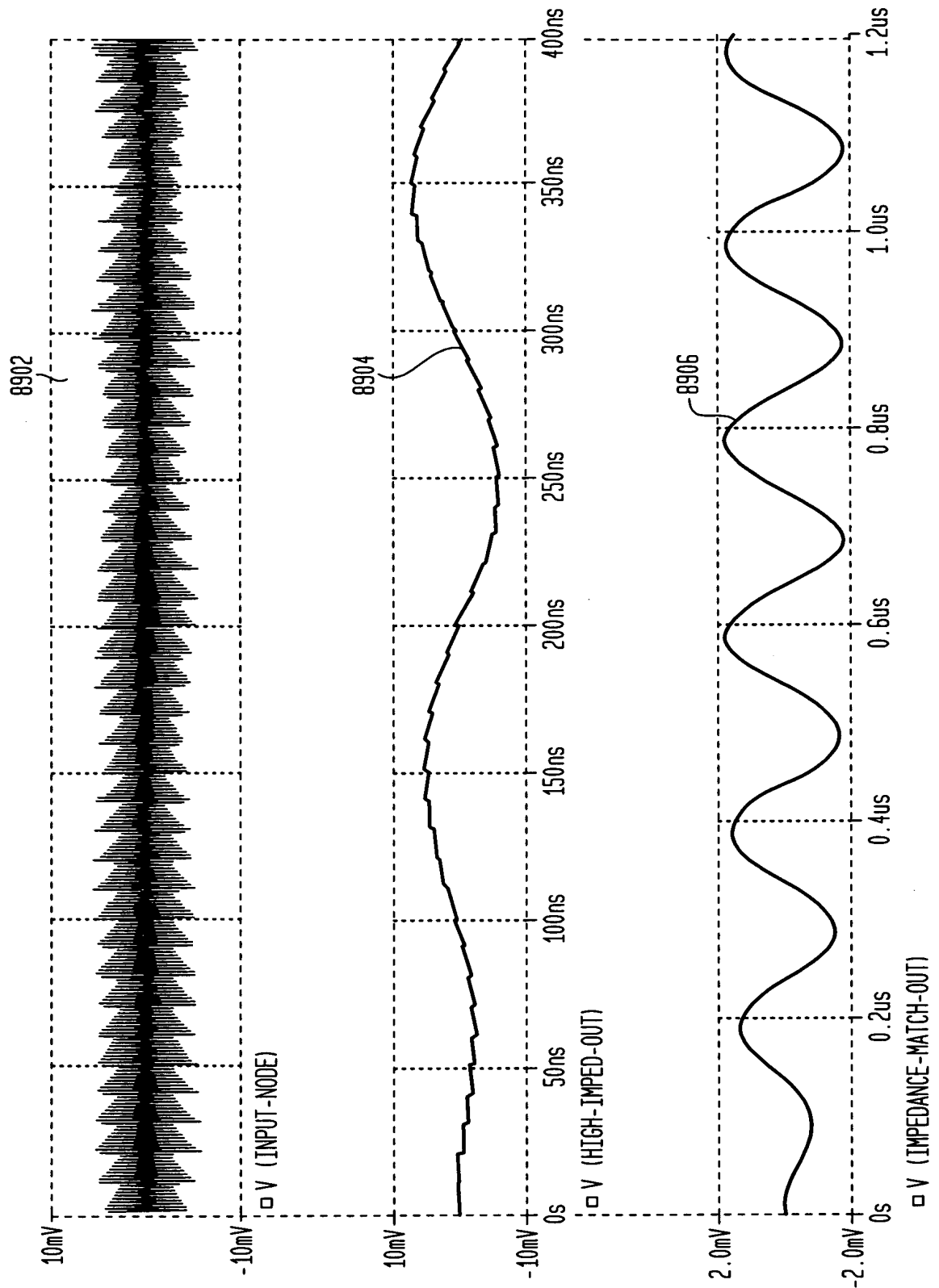


FIG. 91

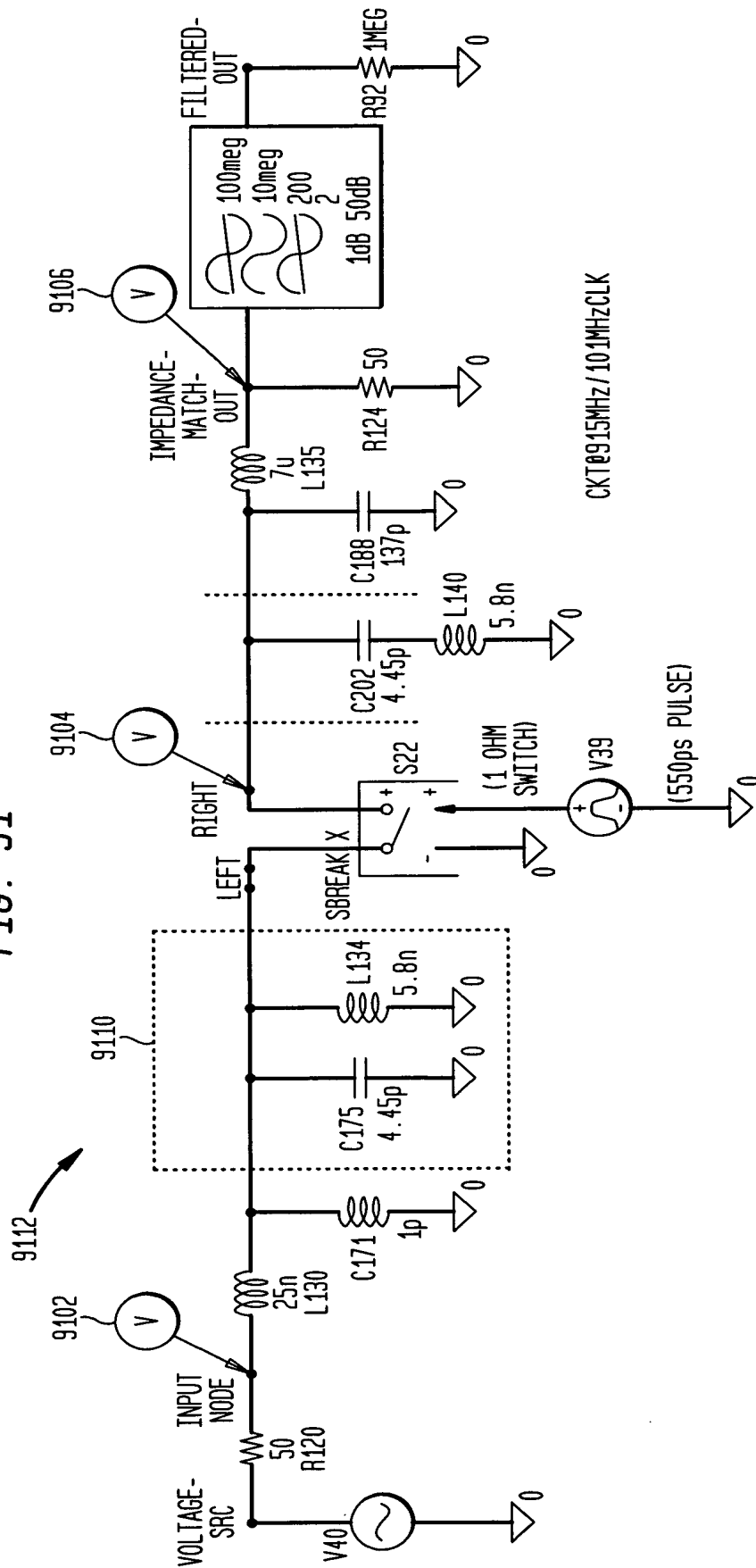


FIG. 92

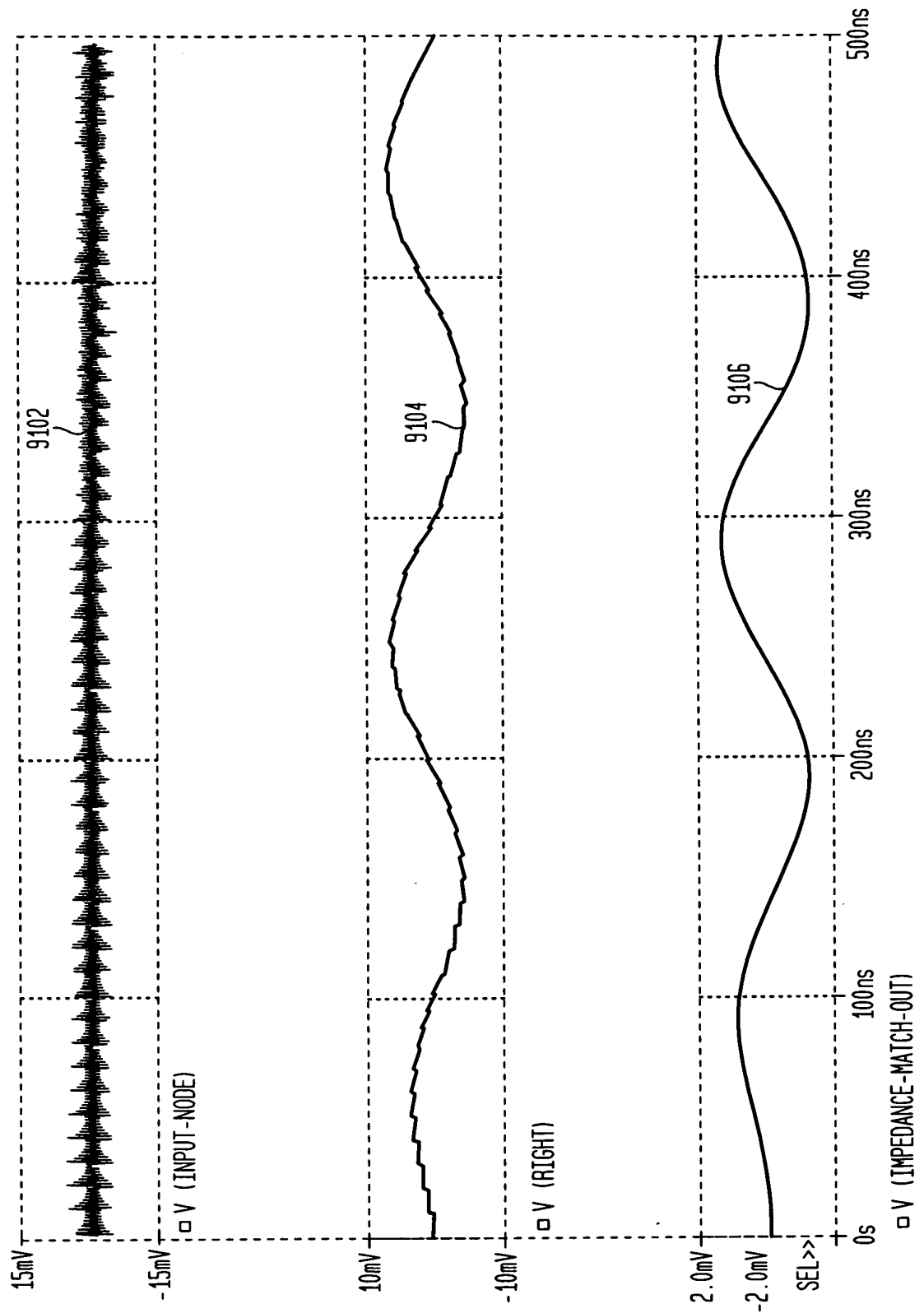


FIG. 93

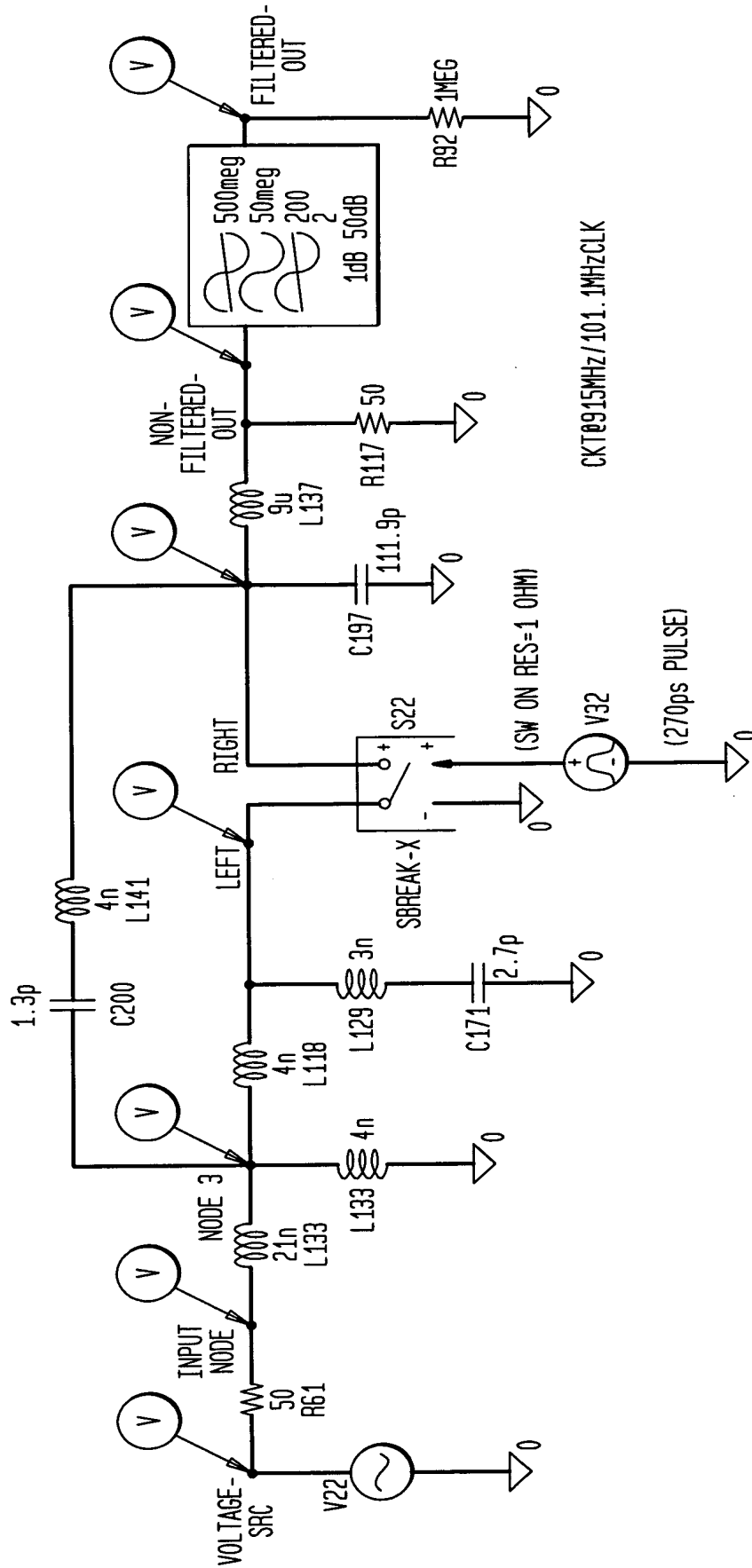
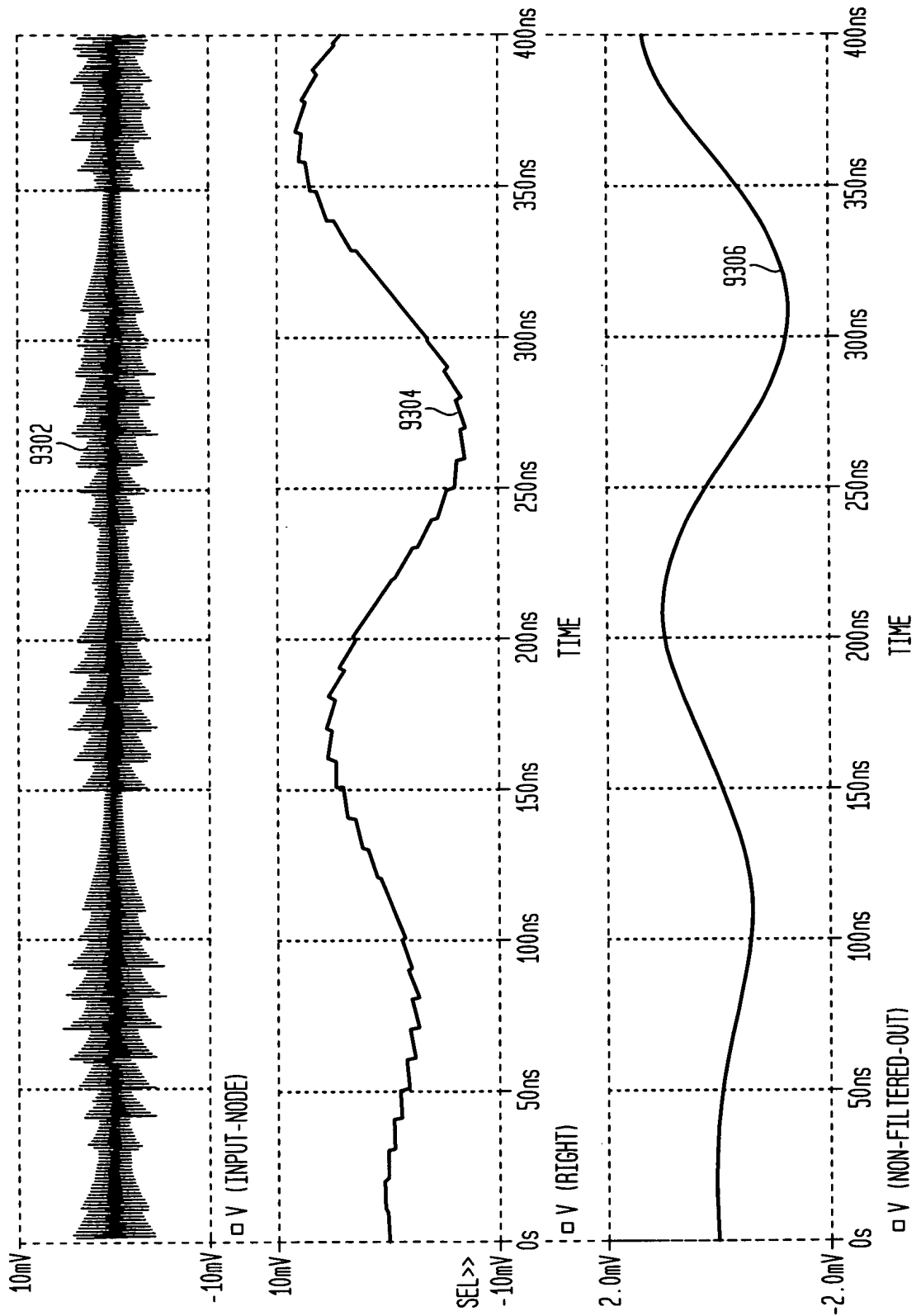


FIG. 94



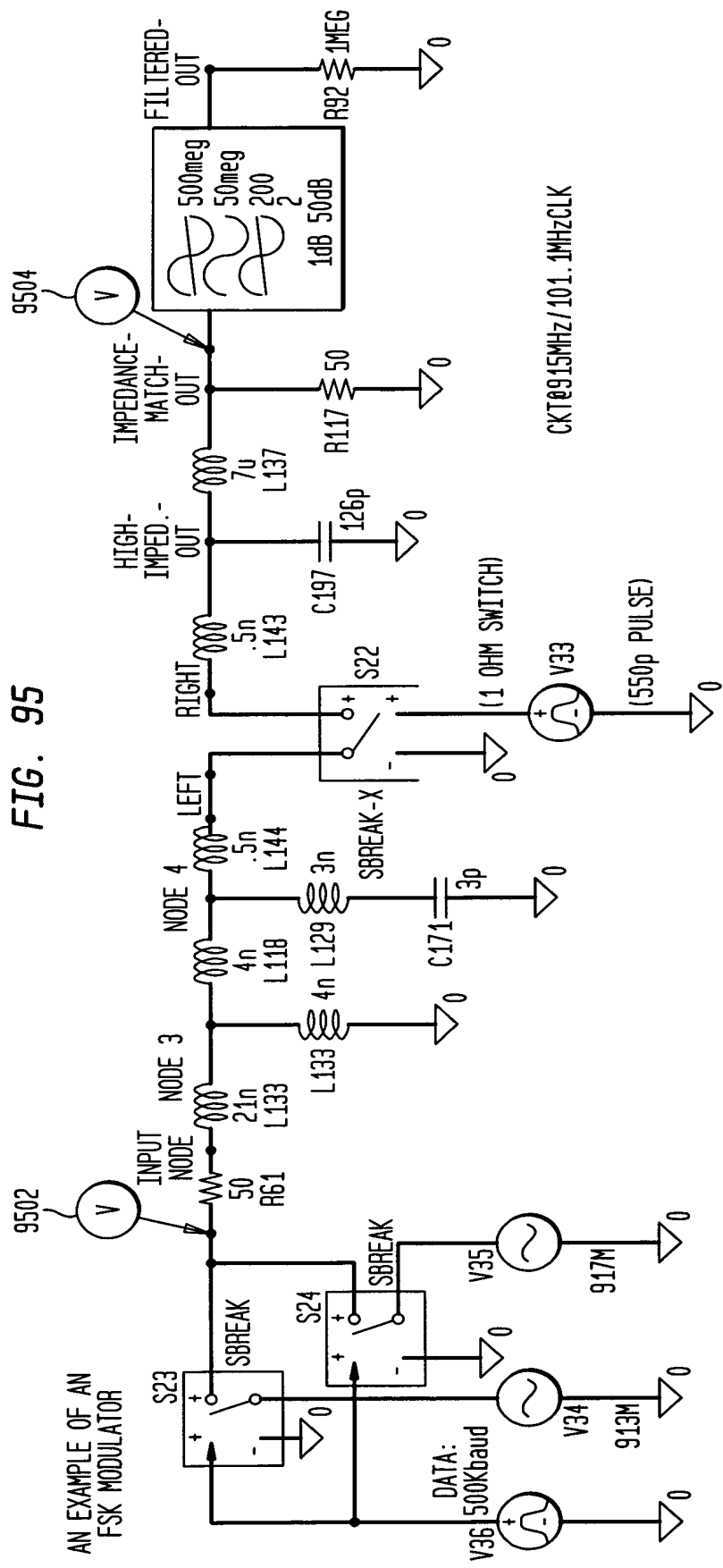


FIG. 95

AN EXAMPLE OF AN  
 FSK MODULATOR

FIG. 96A

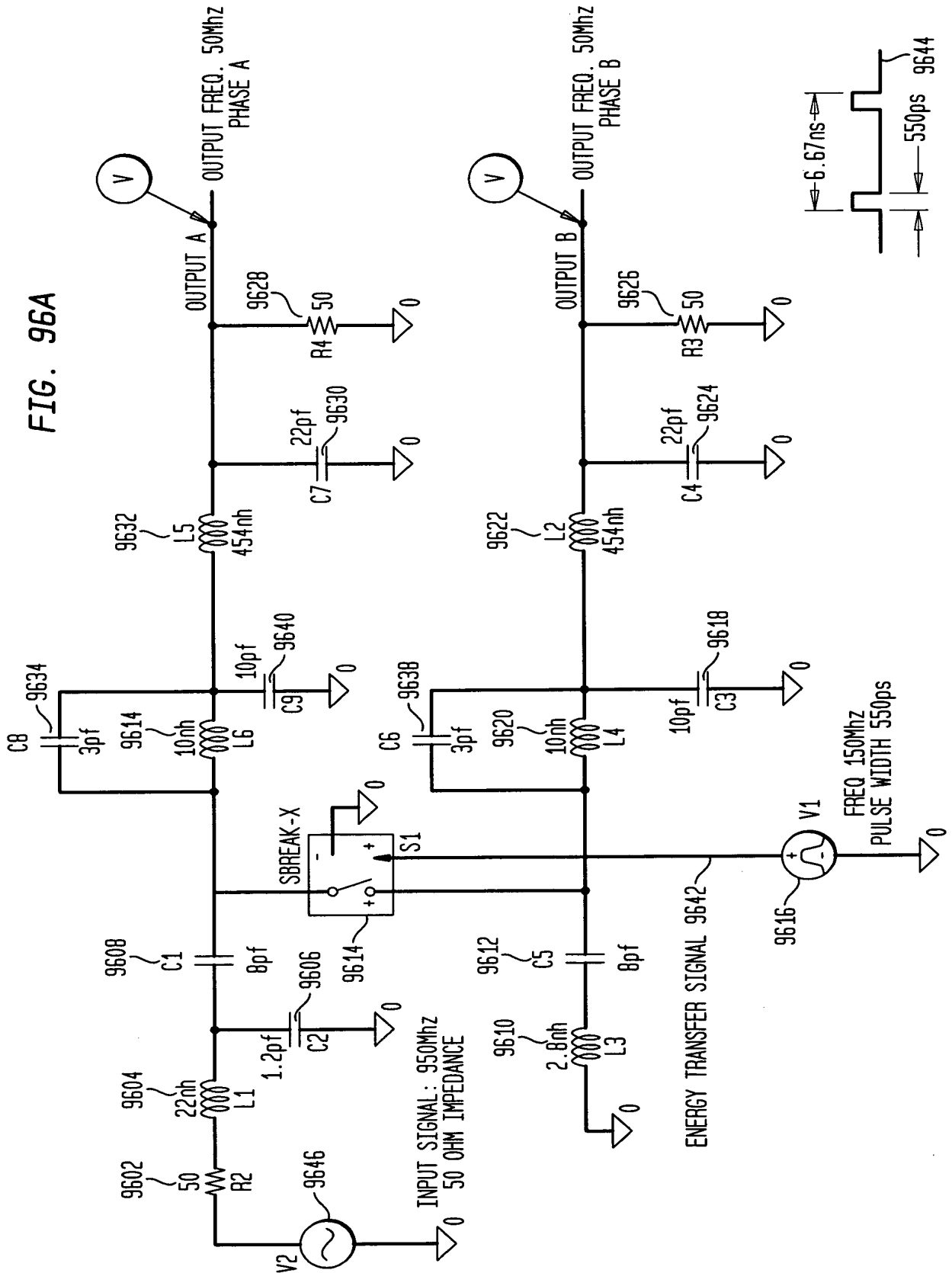


FIG. 96B

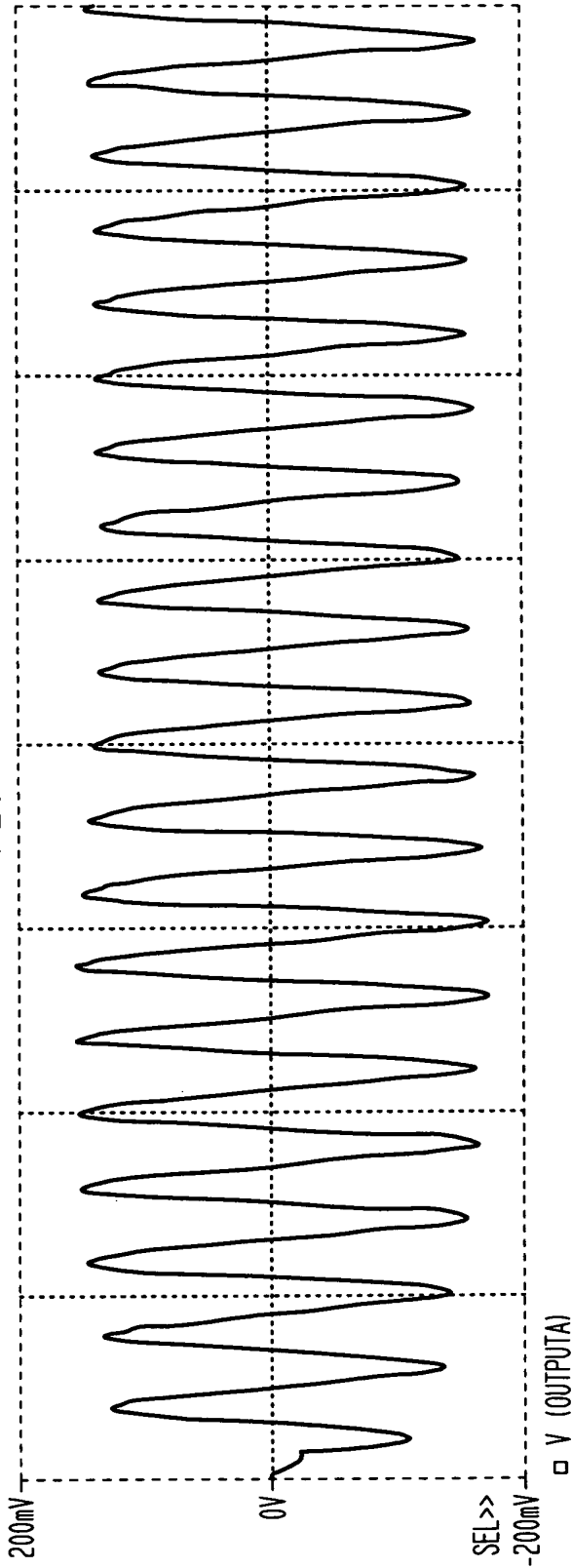


FIG. 96C

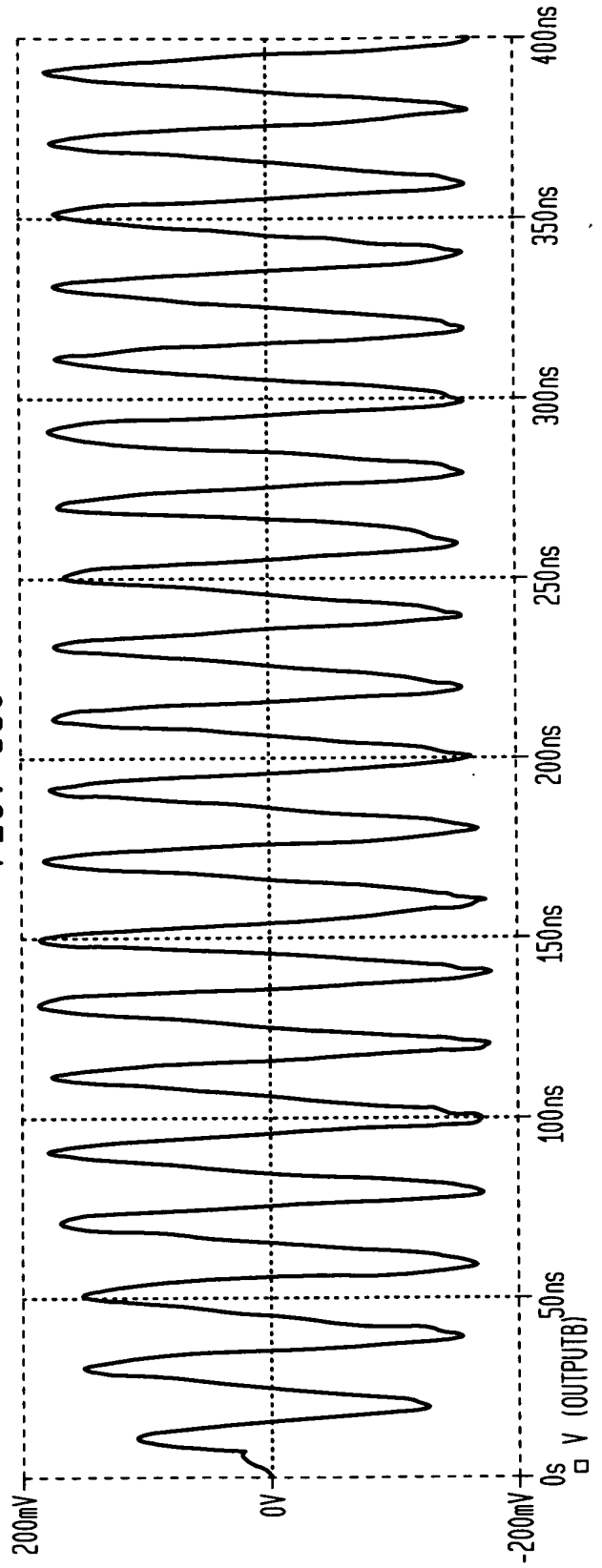


FIG. 97

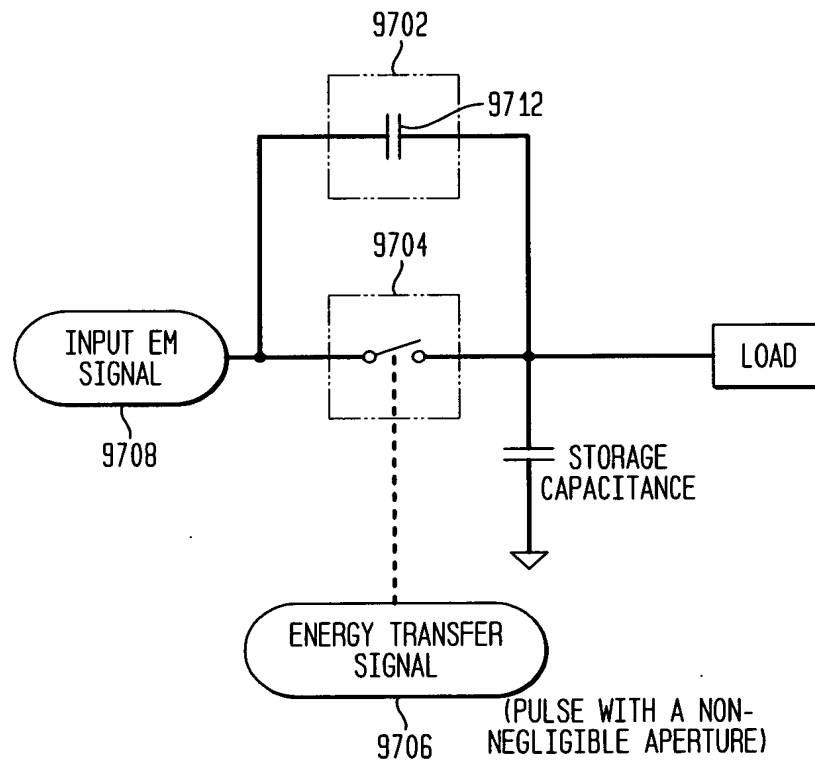


FIG. 98

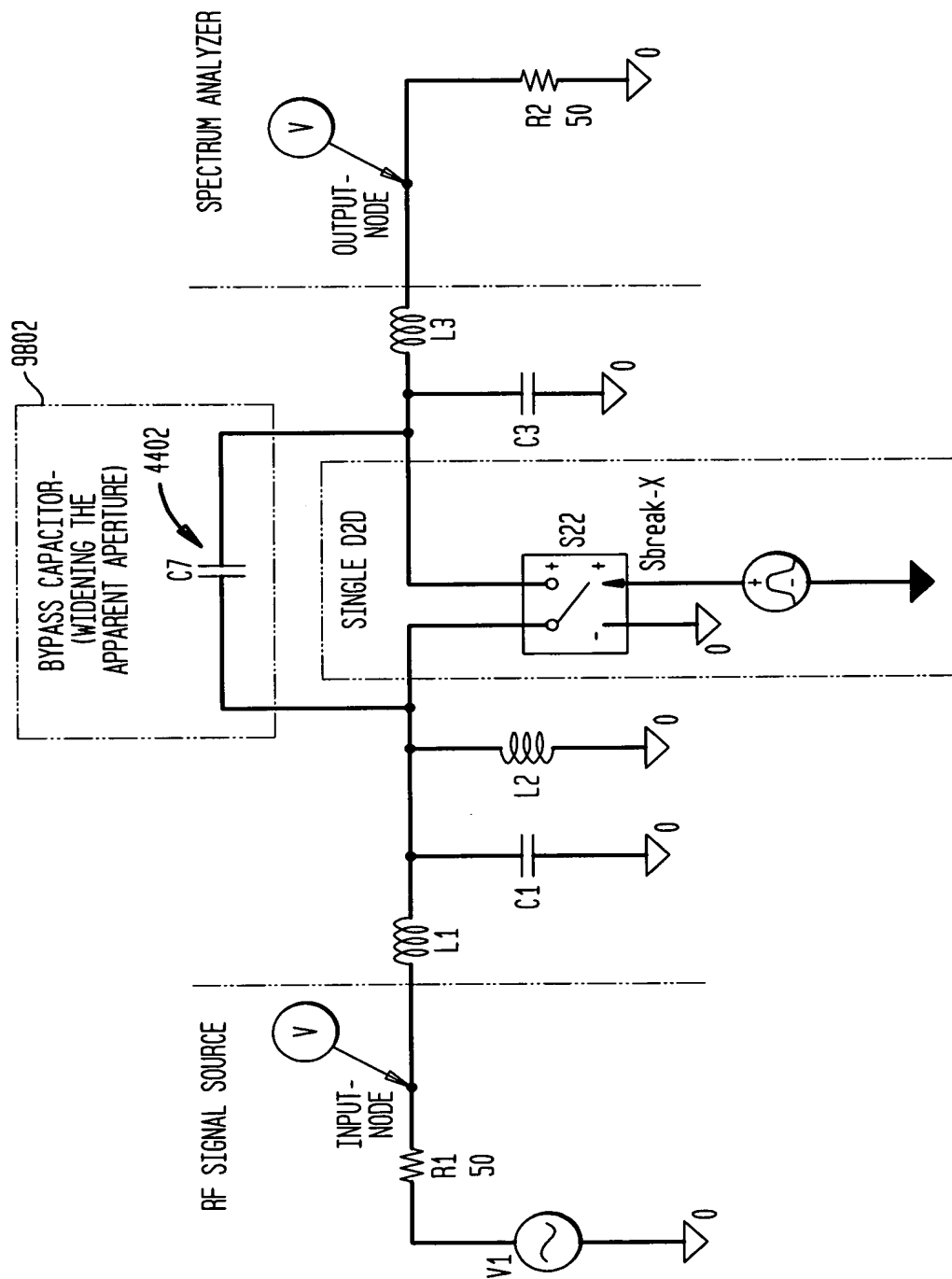


FIG. 99

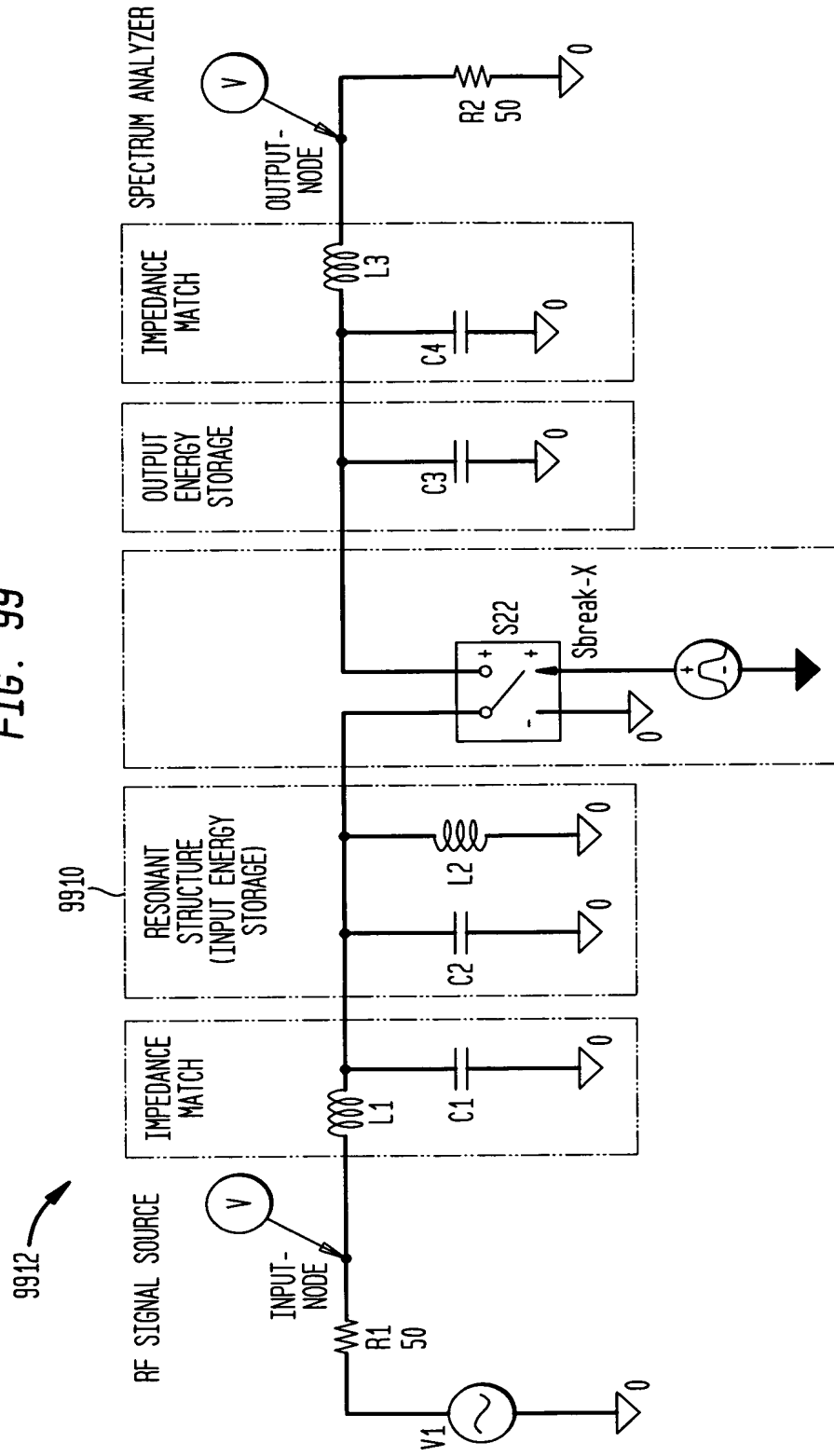
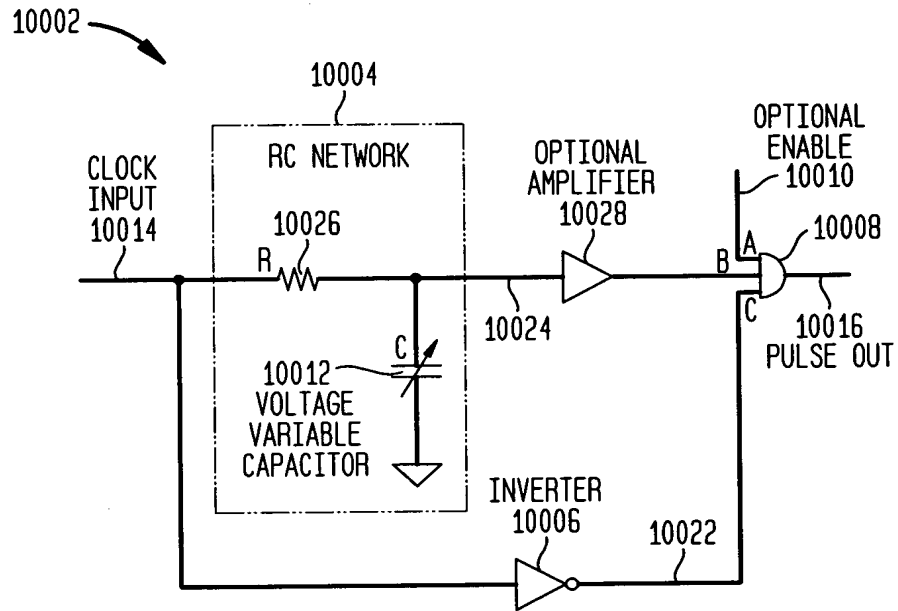


FIG. 100A



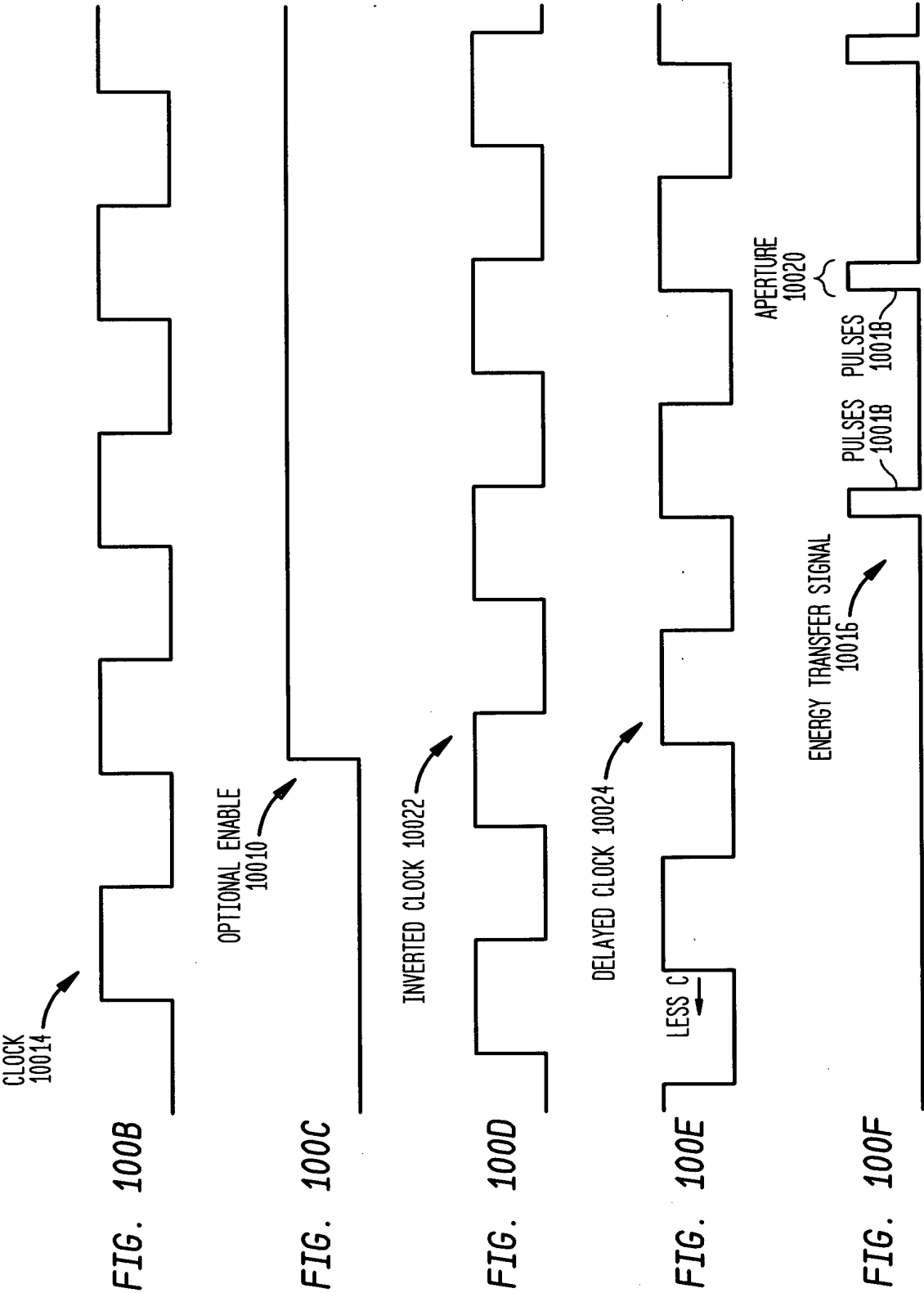


FIG. 101

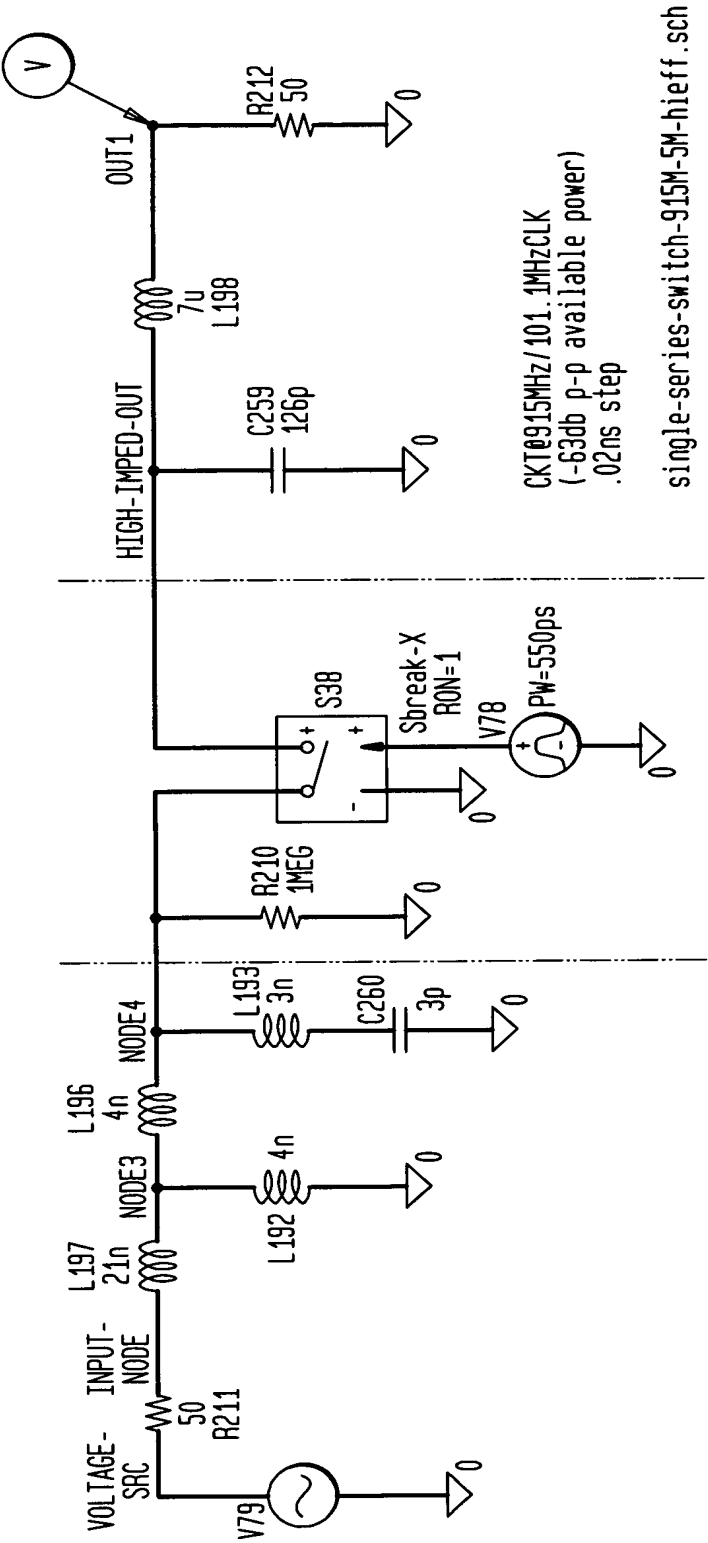


FIG. 102

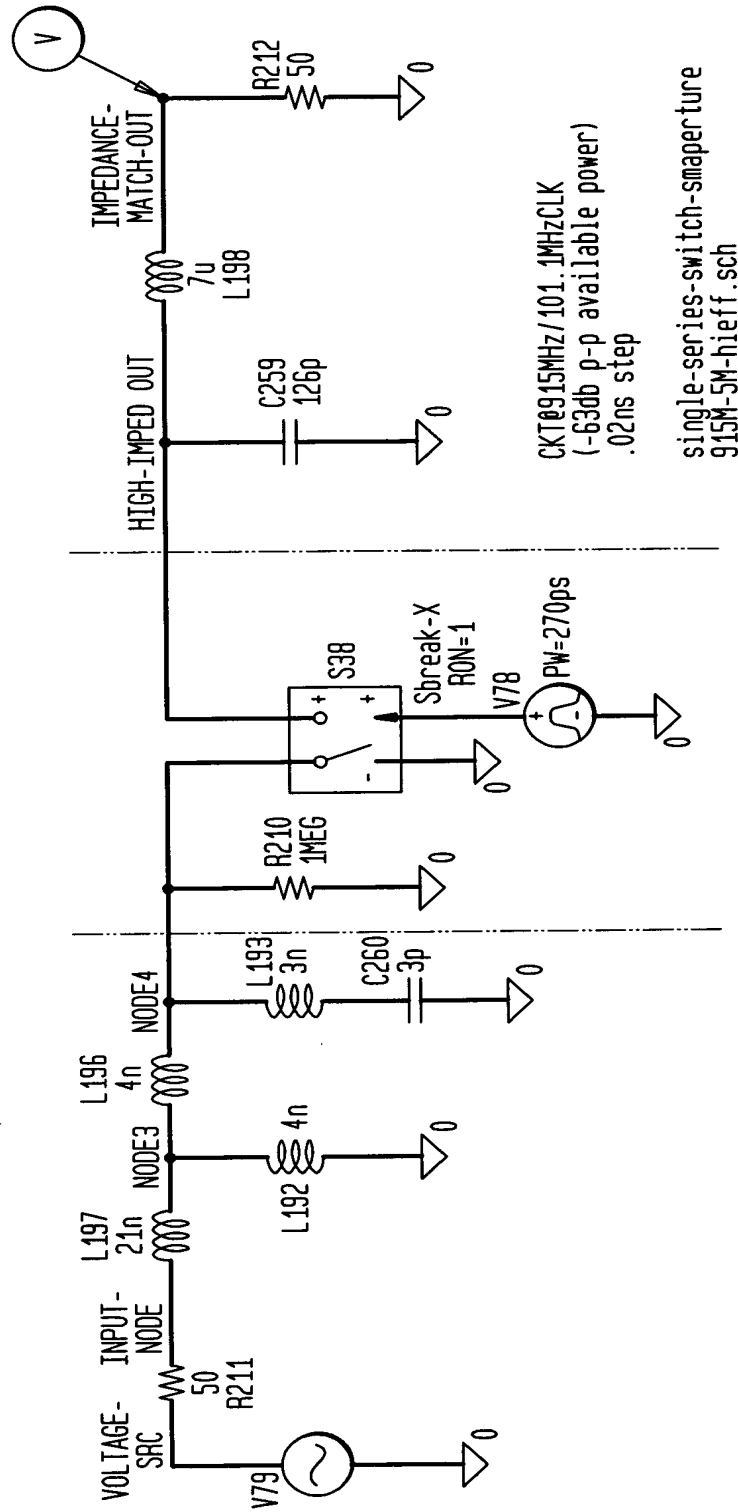


FIG. 103

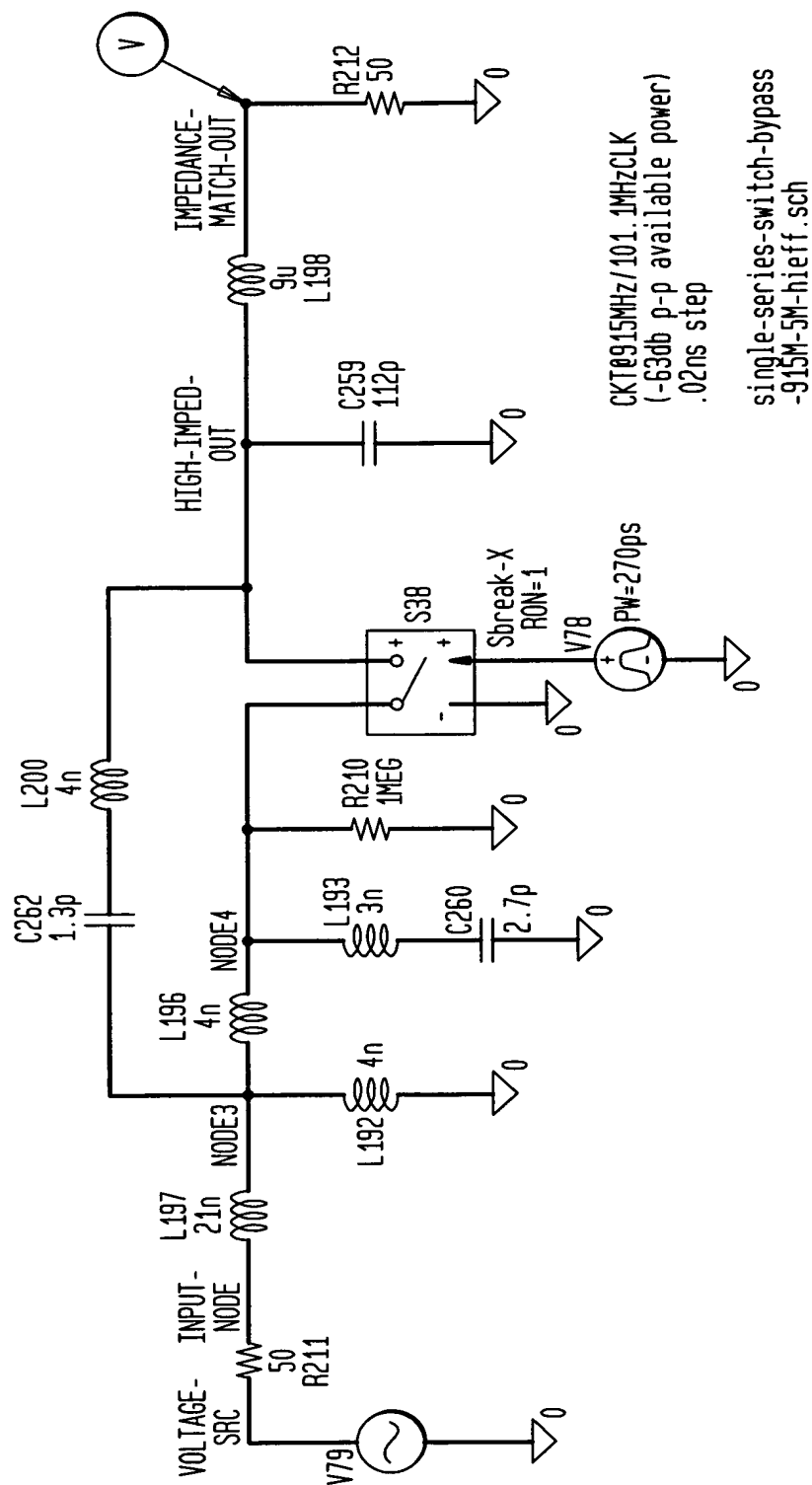


FIG. 104

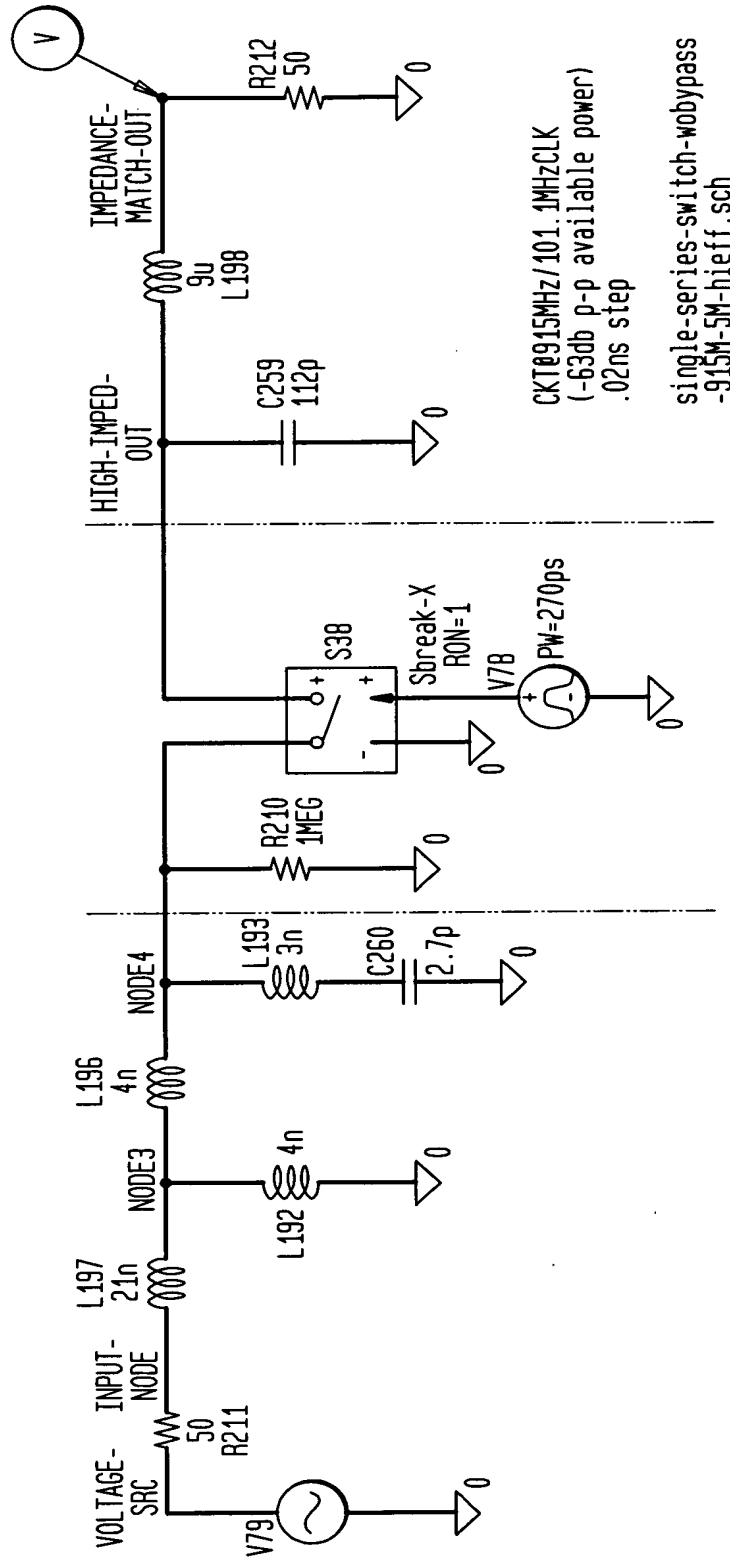
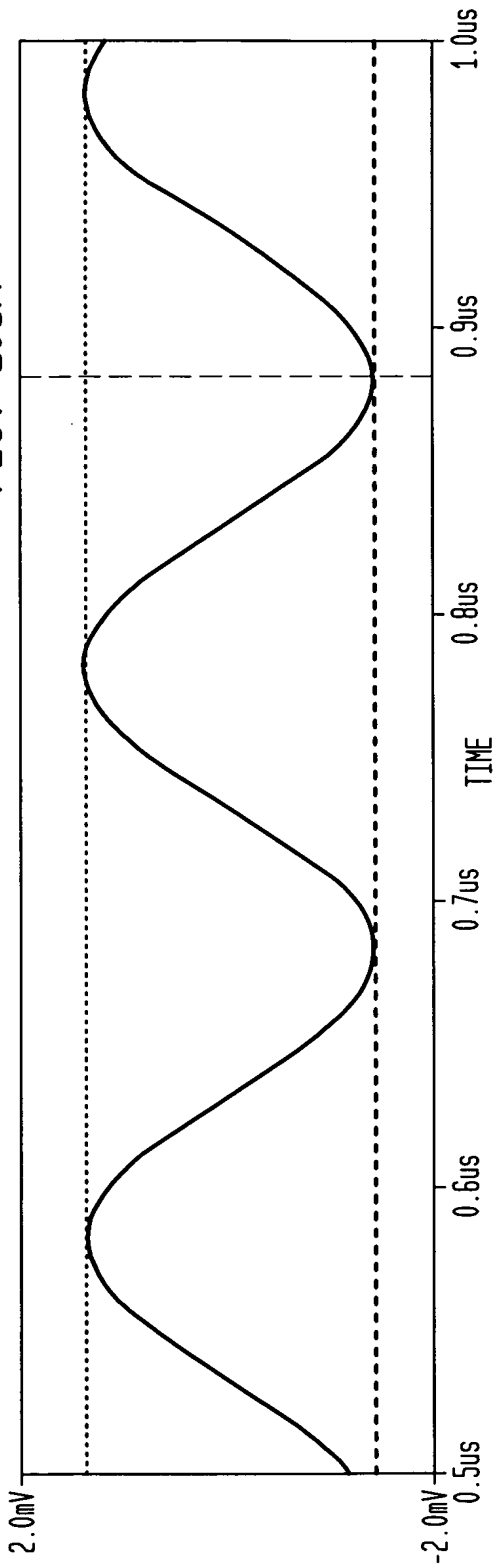


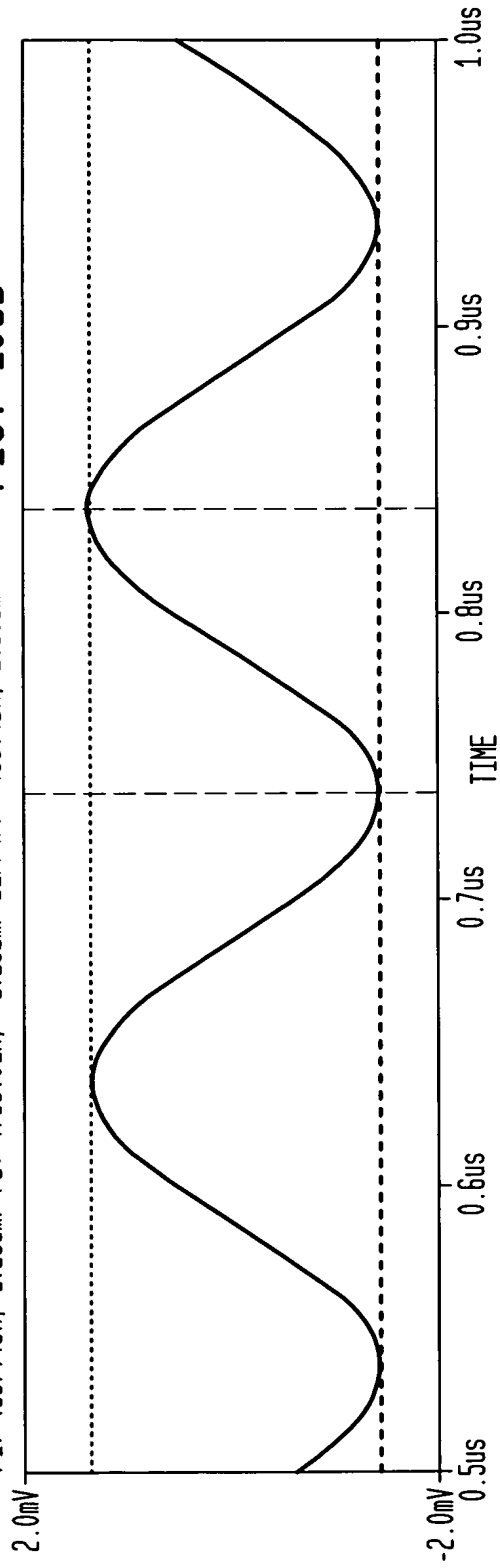
FIG. 105A



@ V(out1)

E1: (981.86n, 1.404m) E2: (883.04n, -1.402m) DIFF(E): (98.82n, 2.806m)  
 F1: (837.43n, 1.253m) F2: (738.01n, -1.252m) DIFF(F): (99.42n, 2.505m)

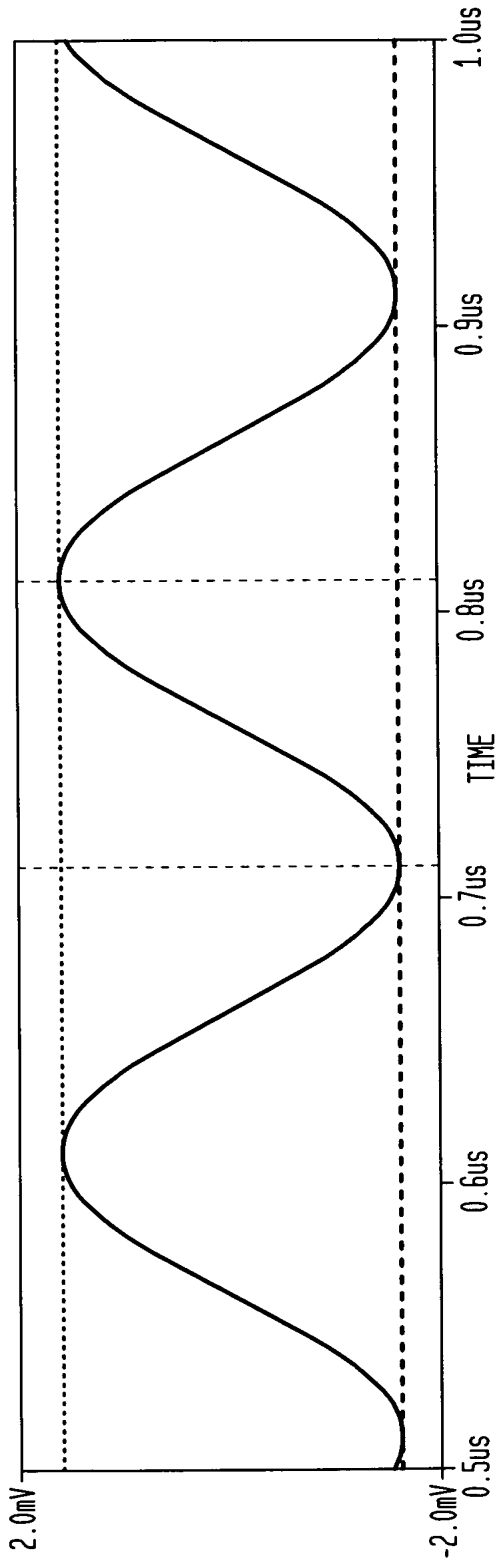
FIG. 105B



@ V(impedance-match-out)

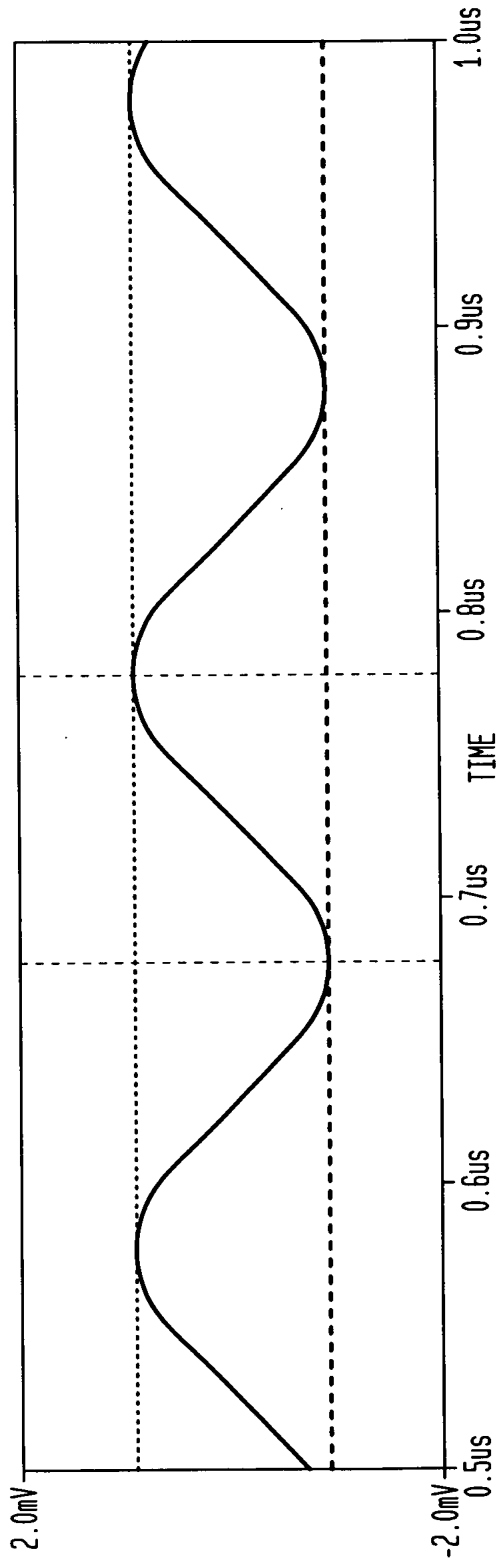
E1: (981.86n, 1.404m) E2: (883.04n, -1.402m) DIFF(E): (98.82n, 2.806m)  
 F1: (837.43n, 1.253m) F2: (738.01n, -1.252m) DIFF(F): (99.42n, 2.505m)

FIG. 106A

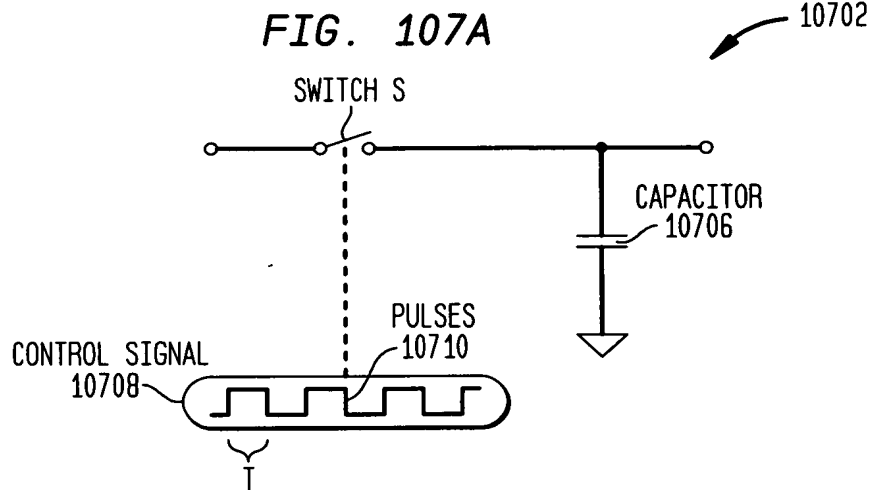


□ V(impedance-match-out)  
 A1: (810.53n, 1.642m) A2: (710.52n, -1.624m) DIFF(A): (100.01n, 3.263m)  
 B1: (777.78n, 942.32u) B2: (677.18n, -942.51u) DIFF(B): (100.60n, 1.885m)

FIG. 106B



□ V(impedance-match-out)  
 E1: (981.86n, 1.404m) E2: (883.04n, -1.402m) DIFF(E): (98.82n, 2.806m)  
 F1: (837.43n, 1.253m) F2: (738.01n, -1.252m) DIFF(F): (99.42n, 2.505m)



**FIG. 107B**

$$q = C \cdot V \quad \text{EQ. 10}$$

$$V = A \cdot \sin(t) \quad \text{EQ. 11}$$

$$q(t) = C \cdot A \cdot \sin(t) \quad \text{EQ. 12}$$

$$\Delta q(t) = C \cdot A \cdot \sin(t) - C \cdot A \cdot \sin(t-T) \quad \text{EQ. 13}$$

$$\Delta q(t) = C \cdot A \cdot (\sin(t) - \sin(t-T)) \quad \text{EQ. 14}$$

$$\sin(\alpha) - \sin(\beta) = 2 \cdot \sin\left(\frac{\alpha - \beta}{2}\right) \cdot \cos\left(\frac{\alpha + \beta}{2}\right) \quad \text{EQ. 15}$$

$$\Delta q(t) = 2 \cdot C \cdot A \cdot \sin\left[\frac{t - (t-T)}{2}\right] \cdot \cos\left[\frac{t + (t-T)}{2}\right] \quad \text{EQ. 16}$$

$$\Delta q(t) = 2 \cdot C \cdot A \cdot \sin\left(\frac{1}{2} \cdot T\right) \cdot \cos\left(t - \frac{1}{2} \cdot T\right) \quad \text{EQ. 17}$$

$$q(t) = \int C \cdot A \cdot (\sin(t) - \sin(t-T)) dt \quad \text{EQ. 18}$$

$$q(t) = -\cos(t) \cdot C \cdot A + \cos(t-T) \cdot C \cdot A \quad \text{EQ. 19}$$

$$q(t) = C \cdot A \cdot (\cos(t-T) - \cos(t)) \quad \text{EQ. 20}$$

FIG. 107C

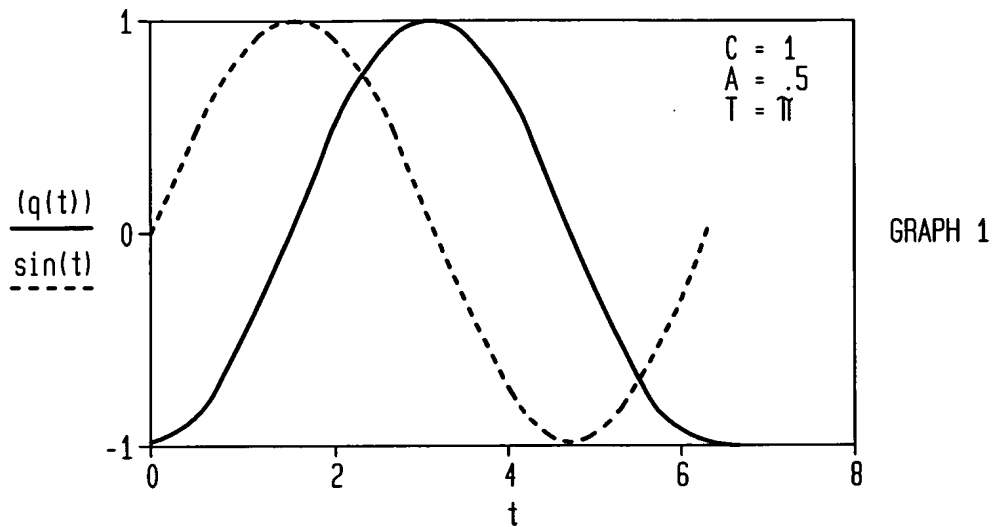


FIG. 107D

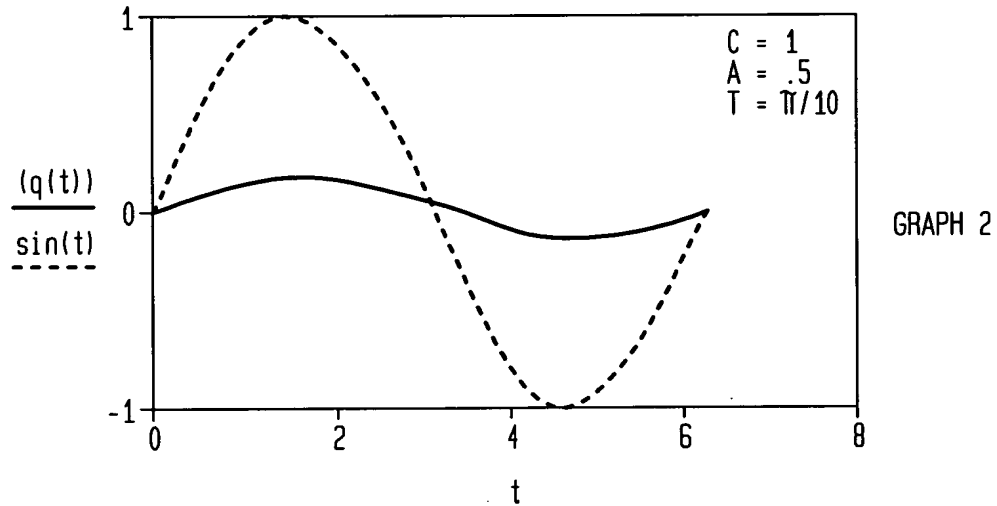


FIG. 107E

POWER-CHARGE RELATIONSHIP

$q = C \cdot V$  EQ. 21

$V = q/C$  EQ. 22

$V = J/C$  EQ. 23

$J = q^2/C$  EQ. 24

$P = J/S$  EQ. 25

$P = \frac{q^2}{C \cdot S}$  EQ. 26

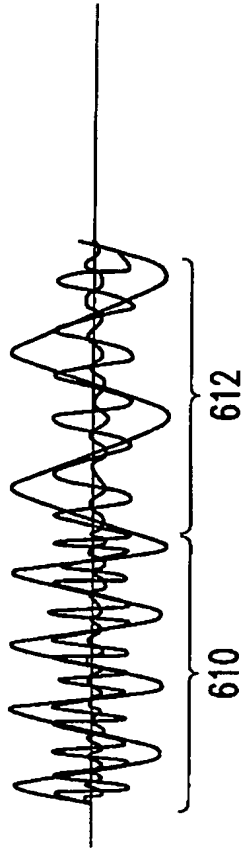
FIG. 107F

INSERTION LOSS

INSERTION LOSS IN dB IS EXPRESSED BY:

$IL_{dB} = 10 \cdot \log\left(\frac{P_{in}}{P_{out}}\right)$  or

$IL_{dB} = 10 \cdot \log\left[\frac{\left(\frac{V_{in}^2}{R_{in}}\right)}{\left(\frac{V_{out}^2}{R_{out}}\right)}\right]$



HARMONICS OF  
SIGNALS 610 AND  
612  
(SHOWN SIMULTANEOUSLY  
BUT NOT SUMMED)

FIG. 6H

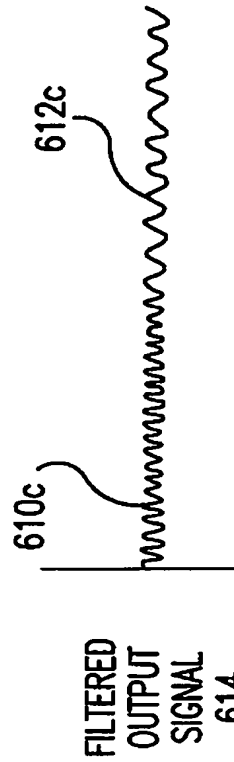


FIG. 6I

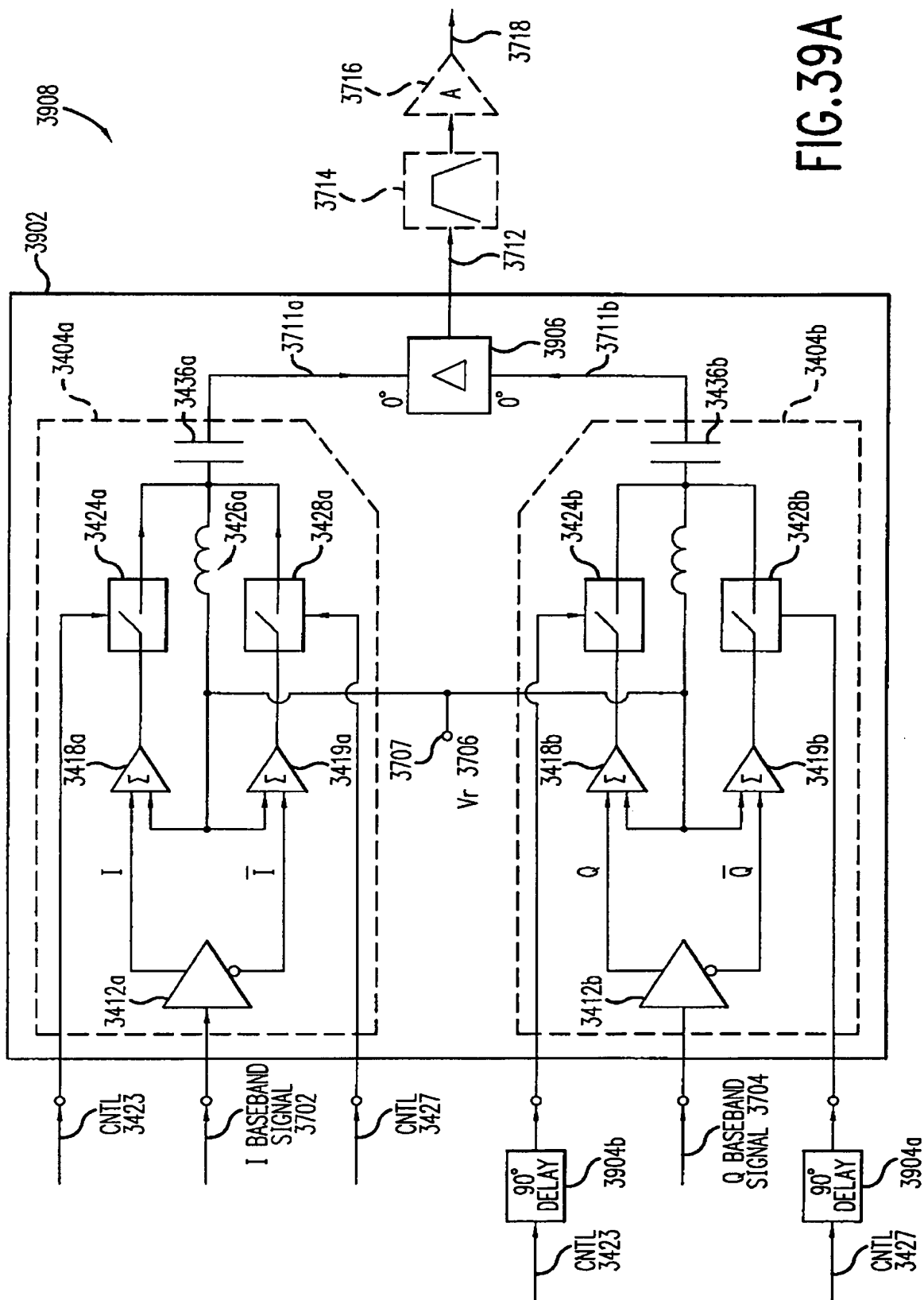


FIG. 39A

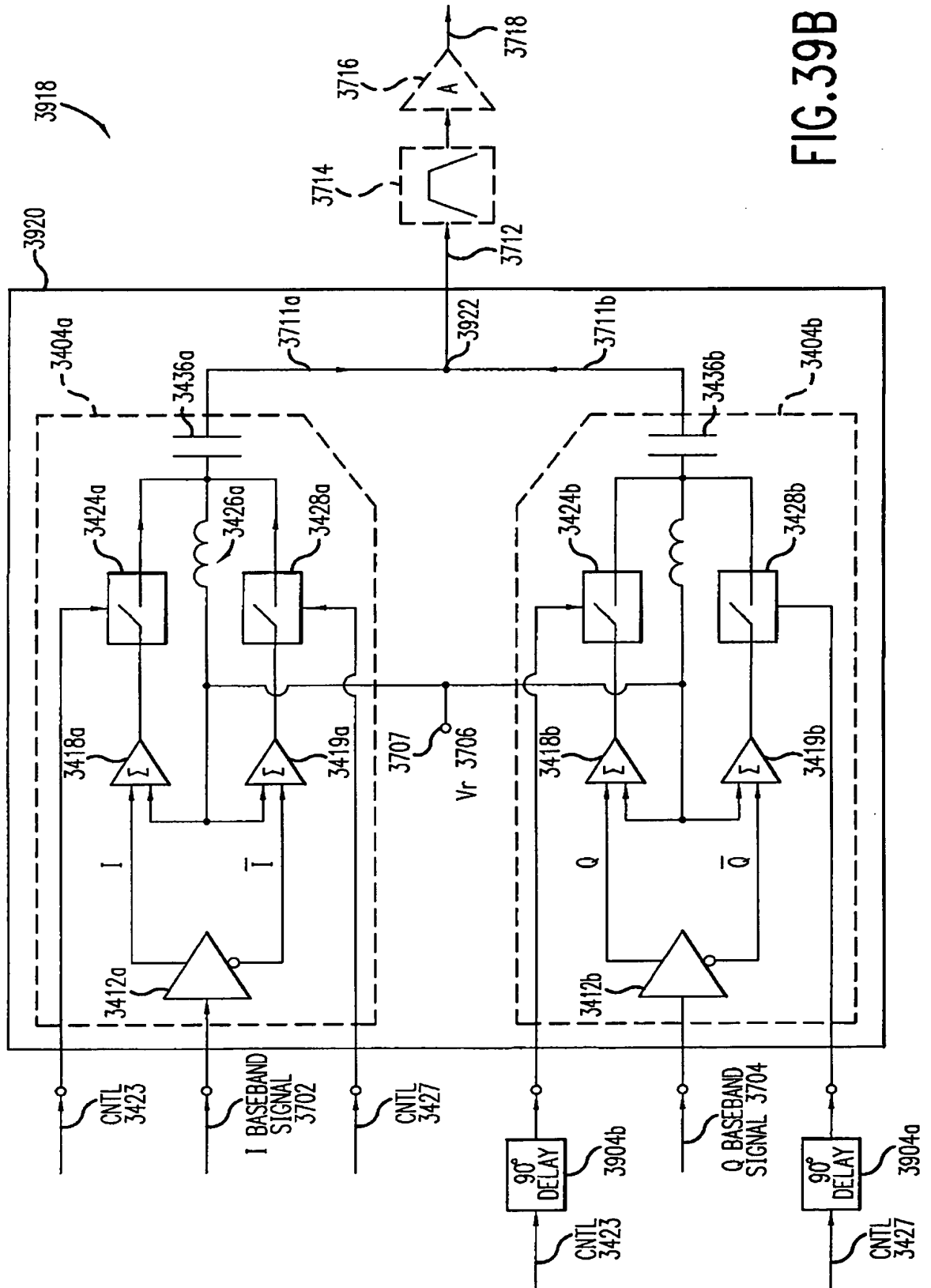


FIG. 39B

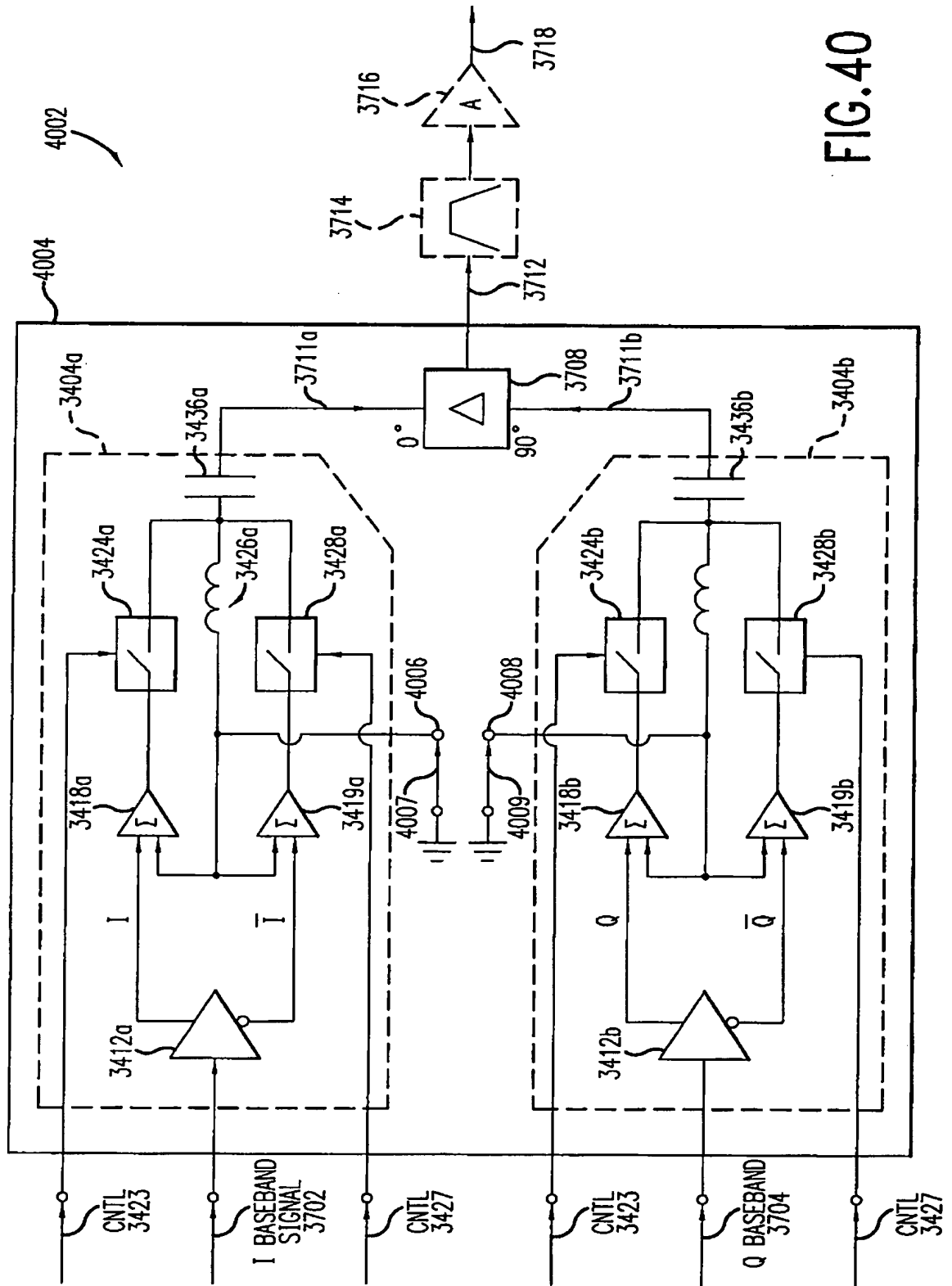


FIG. 40

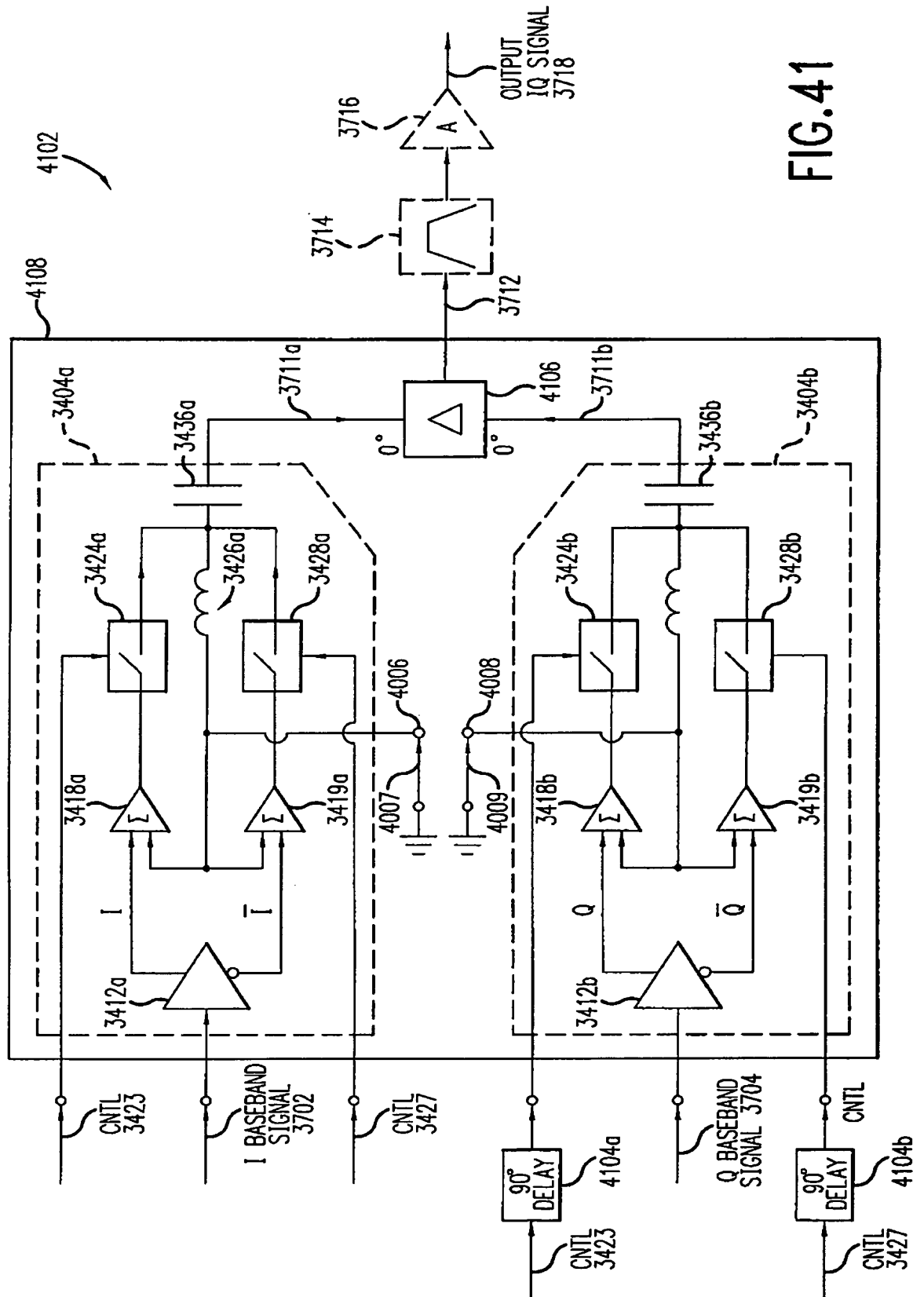


FIG. 41

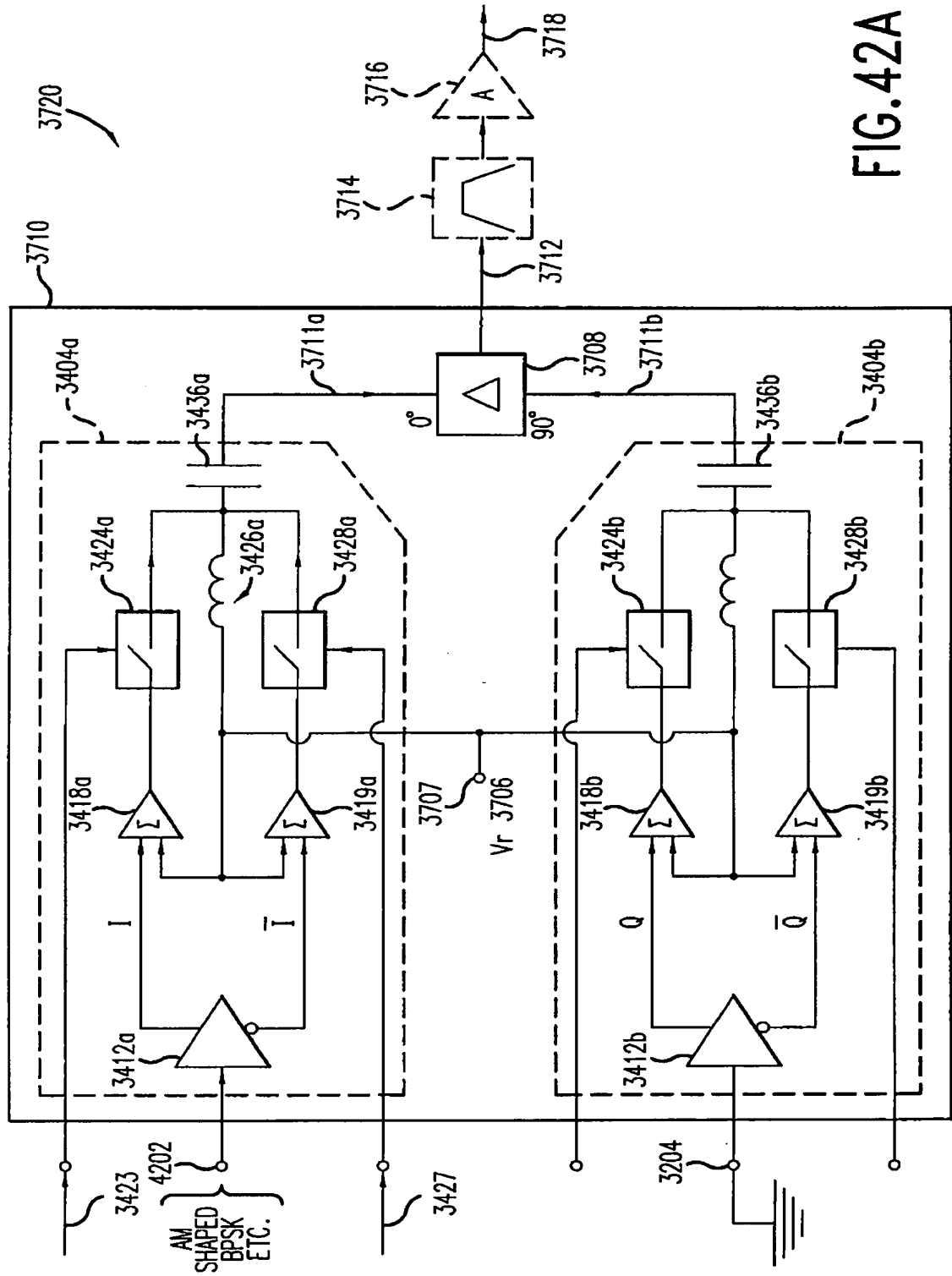


FIG. 42A

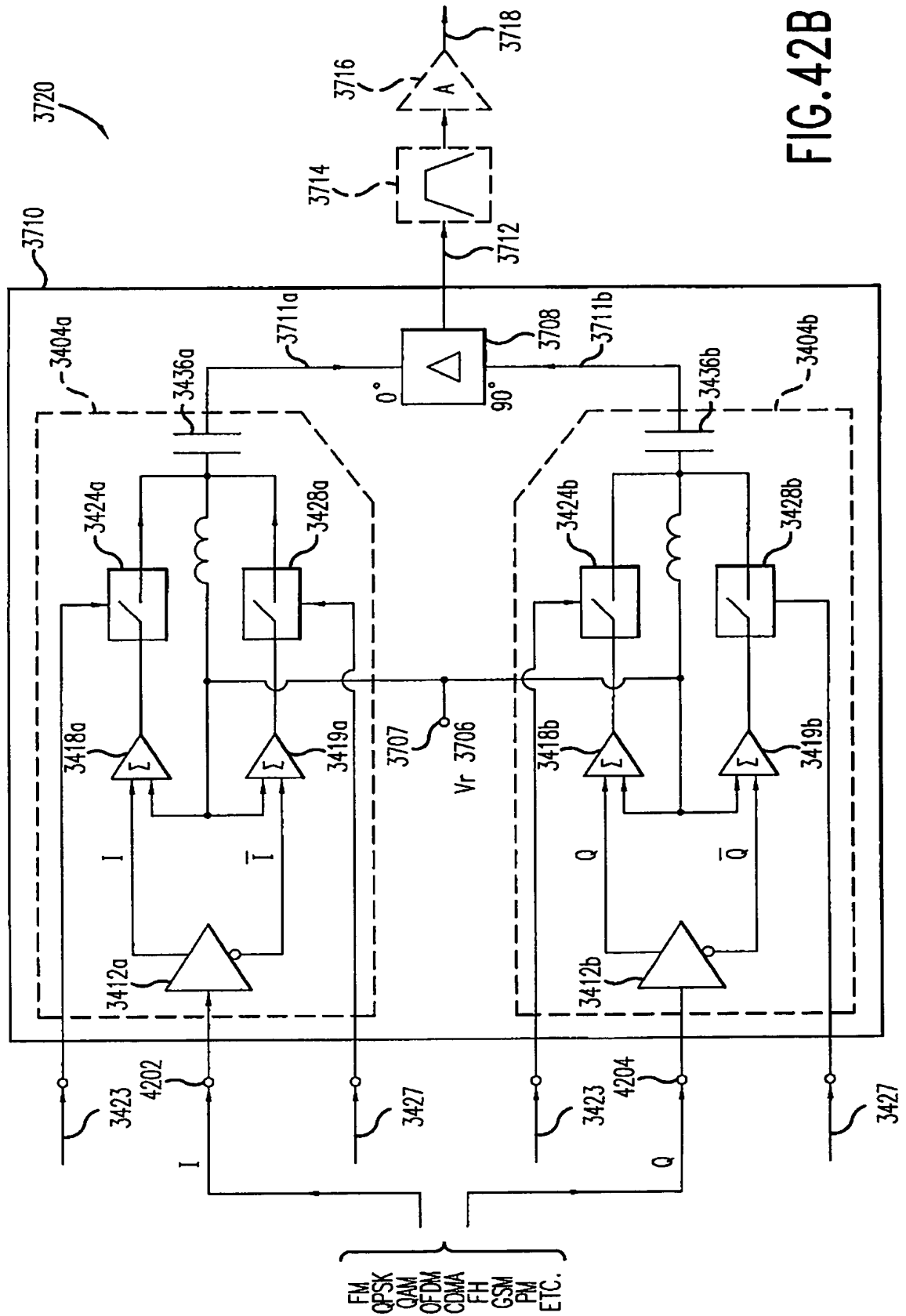


FIG. 42B